The Croonian Lectures

ON

TRYPANOSOMES

CAUSING DISEASE IN MAN AND DOMESTIC ANIMALS IN CENTRAL AFRICA.

Delivered before the Royal College of Physicians of London on June 17th, 22nd, 24th, and 29th, 1915,

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LECTURE I.

Delivered on June 17th.

MR. PRESIDENT AND GENTLEMEN,—I beg to thank you for the honour you have conferred in electing me Croonian lecturer for the present year. I am afraid the subject I have chosen will be found to be of little or no practical interest to the Fellows of this College, since it deals with a form of tropical disease which is seldom seen in England, and then, as a rule, only in hospitals devoted to the treatment of exotic diseases. The investigations into these diseases were also made from the standpoint of causation and prevention rather than treatment, a circumstance which must further lessen their interest to physicians engaged almost exclusively in the treatment of disease. But this is the subject which for some years has almost exclusively engaged my attention, and on account of the pressure of work caused by the war it would have been difficult or impossible to gather materials on any other subject. Further, I intend to confine myself in these lectures to a consideration of the trypanosomes causing disease in man and domestic animals in Central and Southern Africa, since it is only in Zululand, Uganda, and Nyasaland that I have had the opportunity of studying these parasites in the field and under natural conditions. The conditions, however, which obtain on the East and West Coasts of Africa between 20° N. and 30° S. latitude are much the same as those which are found in the central parts, and it is probable that the same trypanosome species are found throughout. So that in describing the species found in our own colonies it may be assumed that all the important pathological species found in Central Africa are being dealt with, although in other places they may be known by other names.

The central region—the tropical or equatorial—corresponds with the distribution of the tsetse flies, and the trypanosomes causing disease in this region are carried from sick to healthy animals by various species of this genus of flies. In the north of Africa, outside the range of the tsetse flies, two trypanosome diseases are found, one of the horse (dourine) and another of camels (surra), the former conveyed from sick to healthy horses by contagion, the latter almost certainly by large biting flies, the so-called horse flies, or tabanidæ. Now, in order to understand the wide distribution of these hæmatozoa, reference may be made to Fig. 1, a map of the world on which their distribution is shown.

GEOGRAPHICAL DISTRIBUTION.

It will be seen from the accompanying map that these blood parasites are found in most parts of the world, from South America through Africa, Southern Europe and Persia to India, Burma, China, and the Philippines. (Fig. 1.) In Africa is shown a broad equatorial band representing the trypanosome diseases carried by the tsetse flies. In it are represented, for example, the distribution of *Trypanosoma gambiense*, the cause of the ordinary or Congo sleeping sickness, and the distribution of *Trypanosoma brucei*, the cause of nagana in animals, and the Rhodesian and Nyasaland form of sleeping sickness or trypanosome disease in man. Further north out of the tsetse-fly region we have *Trypanosoma equiperdum*, the cause of dourine, which the map shows to be widely distributed in Europe also. *Trypanosoma evansi* or surra, which spreads out of Africa along the camel caravan routes into India and China, is also shown.

In this introduction it is unnecessary for me to give an early account of the history of these parasites, since this has often been done and can be found in most text-books; suffice it to say that the first trypanosomes were discovered some 70 years ago in the blood of fish and frogs. These were of interest to zoologists, but having no obvious bearing on the causation of disease did not attract the attention of medical men. Thirty years afterwards, in 1877, Surgeon Timothy Lewis, of the Army Medical Department, discovered in Bombay the trypanosome of the common rat, which was afterwards named after him—*Trypanosoma lewisi*. Three years later, in 1880, Dr. Evans, Chief of the Veterinary Staff in Madras, discovered what were supposed for a long time to be similar flagellates in the blood of horses suffering from surra. It is from these two discoveries that we must date the beginning of the study of trypanosome diseases.

CLASSIFICATION OF THE AFRICAN TRYPANOSOMES.

After these few introductory remarks, and in order to further clear the ground, allow me before proceeding to describe any of the individual species of African trypanosomes to briefly introduce them and to show into what groups or classification they can be thrown. In classifying them I have striven for simplicity, as it seems better for practical purposes to divide them into a few well-defined groups and species rather than to try with our present incomplete knowledge to subdivide them more minutely.

The three characters mainly relied upon in this classification of trypanosomes are, in the first place, their morphology; secondly, their pathogenic action on animals; and, thirdly, their mode of development in the tsetse flies.

At one time it was hoped that cultivation on artificial media might be used as an aid to classification, but up to the present this hope has been unfulfilled. Other methods, such as cross-inoculation experiments and serum diagnosis, I do not consider of much use in making a simple, workable, practicable classification such as will be found of use for diagnosis in the field. If we admit them into our methods the multiplication of species must proceed to an unmanageable degree.

1. *Morphology.*

To begin with the morphology, and this is of great importance in classification. The trypanosomes are first examined in a fresh living condition to ascertain their general appearance and kind of movement. There is a good deal of difference in the range of movement in different species. Whereas many vibrate about one spot, and show little power of wider movement, others are capable of hurling themselves from one point to another with great power and rapidity. But, of course, it is

after the trypanosomes have been fixed and stained that their characteristics can be made out best. For example, the length and breadth of a fixed and stained trypanosome may be very useful in identifying it, and in addition to the length and breadth, a description of the contents of the cell, the nucleus, micronucleus, undulating membrane, and flagellum, may all help in the differentiation of species.

2. *Susceptibility of Animals.*

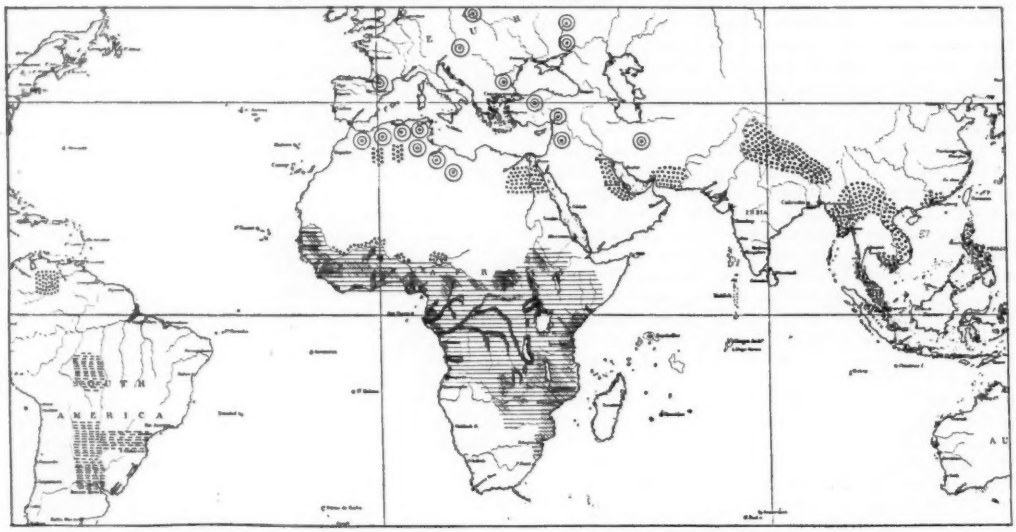
The second means at our disposal for the classification or differentiation of trypanosomes—namely, their pathogenic effect on various experimental animals—must be used with caution. For example, it is well known that their passage through a series of animals of the same species usually exalts their virulence towards that animal. For instance, the nagana parasite, after passage through white rats for many generations, kills the rats in as short a time as two days; whereas the naturally wild strain of nagana only kills the same animals on an average in 20 or 30 days. On the other hand, another species of trypanosome in its natural wild state kills monkeys in a few days. But if it is first passed through a goat, and the attempt is made to infect a monkey with the goat's blood, the experiment always fails. Passage through the goat has lowered the virulence of the parasite towards the monkey. But if a trypanosome is caught in its wild state, and straightway put through a series of experimental animals, the result is, in my opinion, of some use in differentiating species. For example, *Trypanosoma brucei* will be found to be much more virulent and kill off more quickly the various laboratory animals than *Trypanosoma gambiense*. Some trypanosomes are deadly to horses and cattle and harmless to other animals, such as dogs, monkeys, and rabbits, while others show a marked preference for some particular species of animal, such as the domestic pig.

3. *The Development in the Invertebrate Host.*

The third character of use in classification is the mode of development in the tsetse fly or invertebrate host. As already mentioned, all the pathogenic trypanosomes of man and his domestic animals found in Africa, with the exception of the two northern species, pass through a specific cycle of development in the tsetse flies, the mode of development in the tsetse flies is different for different species of trypanosomes, and this may be made use of in classification, and in truth is one of the best means at our disposal. It is not known whether the North African species are capable of developing in tsetse flies. It is possible that on account of disuse they have lost the faculty, if they ever had it. It would certainly be an interesting experiment to try to pass them through the "fly."

FIG. 1.

Geographical Distribution of Trypanosome Diseases.



Trypanosome diseases transmitted by tsetse flies.
Congo sleeping sickness.
Nagana.
Mal de Caderas.
Surra.
Dourine.

CLASSIFICATION INTO THREE GROUPS.

With these few preliminary remarks, let me now introduce the chief Central African pathogenic trypanosomes. They may be divided into three groups, and these are set out on the following scheme:—

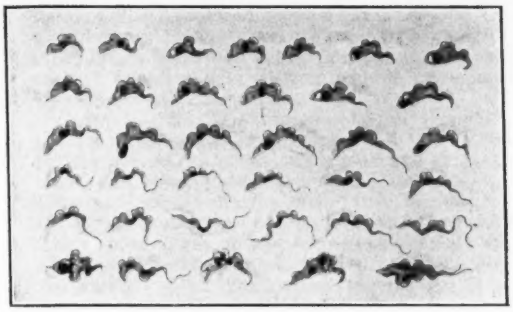
Group A. *Trypanosoma Brucei Group.*
1. Trypanosoma brucei.
2. Trypanosoma gambiense.
3. Trypanosoma evansi.
4. Trypanosoma equiperdum.

Group B. *Trypanosoma Pecorum Group.*
1. Trypanosoma pecorum.
2. Trypanosoma simiæ.

Group C. *Trypanosoma Vivax Group.*
1. Trypanosoma vivax.
2. Trypanosoma capræ.
3. Trypanosoma uniforme.

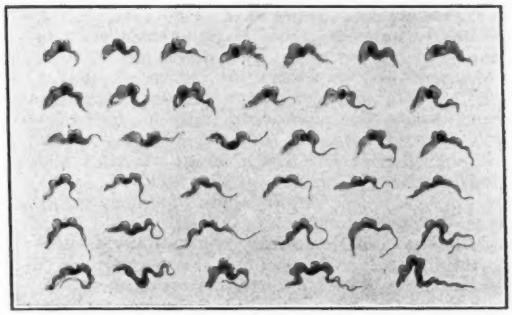
These names probably represent most of the principal pathogenic trypanosomes discovered up

FIG. 2.



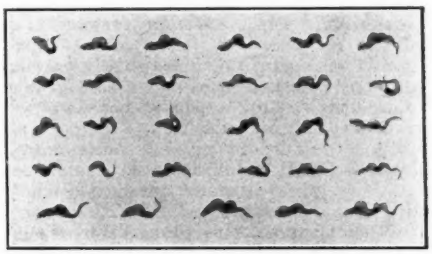
Trypanosoma brucei (Plimmer and Bradford). Zululand, 1913. × about 700.

FIG. 3.



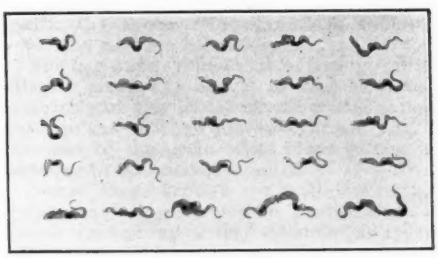
Trypanosoma gambiense (Dutton). Tanganyika, 1913. × about 700.

FIG. 4.



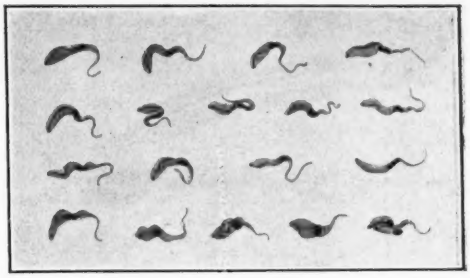
Trypanosoma pecorum. × about 700.

FIG. 5.



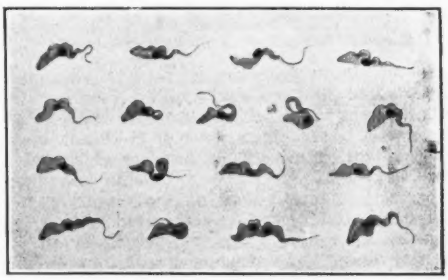
Trypanosoma simiæ. × about 700.

FIG. 6.



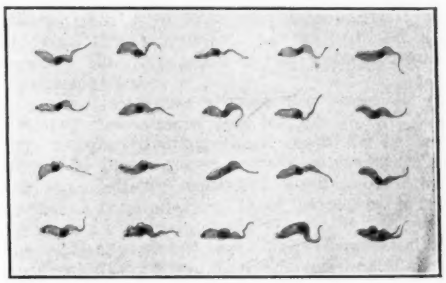
Trypanosoma vivax (Ziemann). × about 700.

FIG. 7.



Trypanosoma capræ (Kleine). × about 700.

FIG. 8.



Trypanosoma uniforme. × about 700.

FIG. 9.

The tsetse fly, life size.

to the present time in Central Africa. For the sake of completeness I have placed the Northern species, *Trypanosoma evansi* and *Trypanosoma equiperdum*, in the first group, as they seem by morphology and their action on animals to belong there. Each group is distinguishable or separable by well-defined characters.

Group A. The Trypanosoma brucei group.—The species forming this group (Figs. 2 and 3) are all more or less polymorphic, varying in size and shape from short and stumpy forms without free flagella to long and slender forms with free flagella. The cytoplasm contains numerous dark-staining granules. The micronucleus or kinetonucleus is small, and is situated as a rule some distance from the posterior extremity. The undulating membrane is well developed and thrown into bold folds.

In regard to their action on animals, the members of this group may be said generally to affect many different species of animals—as, for example, man, horses, cattle, dogs, and most of the smaller experimental animals. The two Central African members of the group, *Trypanosoma brucei* and *Trypanosoma gambiense*, develop in the tsetse flies in the same way. At first the development takes place in the intestine; afterwards the parasites pass into the salivary glands, by way probably of the proboscis, and there complete their development into infective forms. This is the only group in which the salivary glands are invaded. This group can be separated from the other groups by shape alone.

Group B. The Trypanosoma pecorum group.—The trypanosomes are small and monomorphic. The cytoplasm is non-granular. The micronucleus is prominent, subterminal, and often seems to project beyond the margin. The undulating membrane is fairly well developed. (Figs. 4 and 5.)

The cycle of development in the tsetse fly in Group B begins in the intestinal tract; afterwards the flagellates pass forward into the proboscis of the fly, and finally reach the salivary duct or hypopharynx, where they complete their development and become infective. The difference between Group A and Group B is that in the latter the salivary glands are never invaded. There are only two species at present included in this group—*Trypanosoma pecorum* and *Trypanosoma simiæ*. The former gives rise to the most important trypanosome disease of cattle in Africa, while the latter is remarkable for the rapidity with which it kills the domestic pig.

Group C. The Trypanosoma vivax group.—The species making up this group (Figs. 6, 7, 8) are monomorphic, and remarkable for the extreme rapidity of their movements. The posterior extremity is enlarged. The cytoplasm is clear and hyaline. The micronucleus is large and terminal, and the undulating membrane is little developed and simple. This species only affects horses, cattle, goats, and sheep. Monkeys, dogs, rabbits, guinea-pigs, and rats are refractory.

The cycle of development in Group C differs from that in Groups A and B in that it takes place at first only in the labial cavity of the proboscis, and later in the salivary duct or hypopharynx. (Fig. 10.) No part of the cycle takes place in the intestinal tract or in the salivary glands.

These three groups are well marked, and it is fairly easy by microscopic examination alone to name what group a trypanosome belongs to, when seen in the blood of the vertebrate host or even in the tsetse fly.

DESCRIPTION OF THE TSETSE FLIES.

General characters.—The insects (Fig. 9) are dull-coloured, ordinary-looking flies about half an inch in length. The strong proboscis stands out horizontally in front. The wings are long and closed over each other, like the blades of a pair of scissors, when the fly is at rest. The dorsal aspect of the abdomen is marked by five more or less distinct transverse bands.

FIG. 10, A.

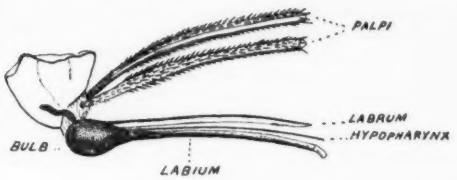
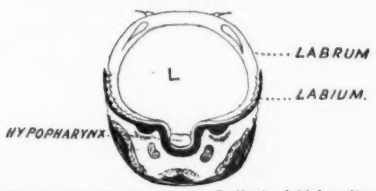


FIG. 10, B.



Mouth parts of tsetse fly. L, Indicates labial cavity.

It is important to understand the structure of the proboscis, as this plays an important part in the development of Groups B and C. In Fig. 10 a side view and a transverse section of the mouth parts are given. In the side view the mouth parts—the labrum, the labium, and the hypopharynx or terminal duct of the salivary glands—are separated. This is done by slipping the point of a fine needle between them at the base and running it towards the tip. This separates the labrum from the labium, and, as a rule, the hypopharynx springs up from the hollow of the labium and appears between the two parts as an extremely delicate transparent tube.

In the transverse section the parts are seen in position, the labrum and labium joined together form a tube through which the blood is drawn in the act of sucking, and known as the labial cavity; and the delicate terminal duct of the salivary glands or hypopharynx lying in the hollow of the labium, and opening near the tip of the proboscis. The salivary glands are long convoluted organs lying chiefly in the abdominal segment of the fly.

When I arrived in Zululand in 1894 there was only one known species of tsetse fly—*Glossina morsitans*. At the present time some 14 or more different species have been named. These are divided into four groups by Austen: The *Glossina palpalis* group; the *Glossina morsitans* group; the *Glossina fusca* group; and the *Glossina brevipalpis* group. For our purpose it will be sufficient to describe the principal species from the first two groups, *Glossina morsitans*, the carrier of *Trypanosoma brucei*, and *Glossina palpalis*, the carrier of *Trypanosoma gambiense*. But I may mention here that probably all the tsetse flies are capable of acting as carriers of all the pathogenic trypanosomes, at least in laboratory experiments. What makes one species of fly the especial carrier of a particular trypanosome is probably bound up in the natural history, the habits, and distribution of the fly.

Habitat.—This is the species made familiar by writings of travellers like Livingstone and hunters like Gordon Cumming. Until a few years ago it was the only species of which the habits had been studied, and when the word tsetse was used it was this species which was meant. Its habitat is the dry, thorny scrub which covers large areas of tropical Africa. (Fig. 11.) It is not found along the banks of lakes or rivers, and, in fact, seems to have a distaste for water. It requires shade, however, and is never found on open plains where it would be exposed to the tropical sun. In the "fly country" there are thickets, undergrowth, and trees which supply the requisite shade.

Habits.—These flies begin to bite soon after sunrise if the day is fine, but usually disappear during the hottest hours, coming out again towards evening when it becomes cooler. About sunset they are often particularly active. Moving objects such as a motor cycle seem to attract them greatly, and the cyclist is often surrounded by a cloud of them attacking him like an angry swarm of bees. Under these circumstances there is often a great disparity in the numbers of the sexes, the males predominating. This is probably due to the males attaching themselves to a moving object in order to mate with the females, which are attracted by the same movement, and come out of their cover to feed. Tsetse flies are very sensitive to weather conditions. If it rains or blows they usually remain hidden. They diminish in numbers during the dry season, and are most numerous towards the end of the rains.

FIG. 11.

Habitat of *Glossina morsitans*.

Food.—In regard to the food of *Glossina morsitans*, in one experiment 500 flies were caught in the sleeping sickness area of Nyasaland, and examined as to the contents of their intestines. It was found that 288 (or 57·6 per cent.) contained mammalian blood in a recognisable state. Measurements of these were made and the small type of blood cell was found to predominate, such as occur in the hartebeeste, waterbuck, and other antelope. In only three cases were nucleated red blood corpuscles found. From this experiment it appears, at least in that district, that the principal food of *Glossina morsitans* is the blood of antelope. Tsetse flies never suck the juices of fruits or vegetables, as is usual in the case of other biting flies such as mosquitoes.

The question is sometimes asked as to how often tsetse flies feed under natural conditions. From experiments with flies in the laboratory it was found that blood is recognisable in stained specimens for two and even three days after a feed, but not beyond the third day. This means, roughly, that half the 500 flies examined had fed within at most three days of their capture; it results that flies feed under natural conditions once in five or six days.

It is rather an interesting point as to whether these flies could maintain an existence on the smaller mammals and birds if the big game disappeared. They are quite ready to feed on the smaller animals, but most of these, such as monkeys, shrews, the mongoose, and rats, are usually too quick and snap up the fly before it has had time to feed. Another curious fact seems to be that when rinderpest sweeps through a country the tsetse flies disappear with the game and only return when the game has again multiplied to a fair extent. The curious point is that by no means all the game is killed off by the rinderpest; there is usually some species left which one would think would suffice to keep numbers of flies in food. It was thought at one time that this mortality among the flies might be due to some poisonous quality in rinderpest blood, but when flies were fed on rinderpest animals nothing untoward happened.

Act of feeding.—In regard to the act of feeding, this is done as a rule very rapidly, the fly fully distending itself in from half a minute to a minute after it has punctured the skin.

Reproduction.—Lastly, we come to the most important function of the tsetse flies, that of reproduction. The genus *glossina* is distinguished from most of the other diptera in being pupiparous. The female produces a single whitish or yellowish-coloured larva about once in ten days. This is retained in the oviduct until it is fully grown. As soon as the larva is born it creeps at once into the soil or into a crack in the earth, or among leaves and débris, and within a few hours has changed into a hard black puparium. As to how long the pupa remains quiescent depends mainly on the temperature. At a temperature of 85° F. the fly will emerge in 23 days, at 70° in 35 days, and at 65° in about 60 days. These larvæ are deposited all over the "fly" country, but there are certain positions and conditions which are favoured. The female usually chooses a spot with plenty of shade. A favourite site for her to take up her abode is on the under-surface of a tree which has fallen, and which remains at places some inches above the ground. Another condition is that the breeding place is near a native path or a game path. This may be to enable the mother to procure her food

easily, or it may be some instinct in favour of the offspring which enables the newly emerged fly to obtain a feed within 24 hours of birth.

Glossina Palpalis.

This is also a widely distributed species. It ranges on the west coast from the Senegal river —16° N. latitude—to Angola. It extends eastwards into the Bahr el Ghazal. The eastern boundary of the species follows the valley of the Nile, the eastern shores of Lake Victoria and Lake Tanganyika. From the south end of the latter lake the boundary follows the frontier between the Congo Free State and Rhodesia in a south-westerly direction to Angola.

Habitat.—This species differs from *Glossina morsitans* in being a lover of water. It frequents the edges of lakes and rivers where there is clear water and plenty of shade; this shade consists of thick jungle with high trees and dense undergrowth, which grows to within a few feet or yards of the water's edge. This tsetse fly is never found on open beaches backed by grass plains, even although there may be some low scrub near the water. It is not found in reed beds or papyrus swamps, and as most of the Uganda river valleys are choked with reeds it follows that the tsetse fly does not ascend these rivers. In short, it is never found away from water, except in cases where it has followed man or animals for a mile or so for the purpose of feeding. In this way it is brought much more in contact with man than *Glossina morsitans*, which is a dweller in desert places, the haunt of wild animals. *Glossina palpalis* is a frequenter of watering places, on lakes and rivers, or water-holes in the bush, where the natives come for water, and where as a rule, on account of the density of the human population, there is little game.

Habits.—*Glossina palpalis* has the same habit of biting by daylight as *Glossina morsitans*. It is not seen until the sun is up. If it is a fine morning they may be active as early as seven or half-past seven. On dark shady spots on the lake shore they do not become troublesome until about ten o'clock when the sun is well up. In cloudy or windy weather few flies are abroad. They have a rapid flight and suddenly and silently flop on to the skin, causing so little sensation that the sharp stab of the proboscis is often the first thing felt. Sometimes they insert the proboscis so painlessly that attention is not drawn to the spot. As a rule little or no irritation follows the bite, no itching or swelling or reddening of the skin. But if there have been many bites about the same place there is often a good deal of swelling, induration, redness, and irritation which last for several days, and as is natural some individuals are much more affected than others.

Feeding.—As in *Glossina morsitans* the time taken by the fly in filling itself with blood is short. Stuhlmann weighed the flies before and after feeding and found that the males took in one and a half times their own weight in blood, and the females sometimes as much as two and a half times.

Food.—Under ordinary circumstances in populous districts it may be assumed that man supplies most of the food of this fly, and it is considered by some that it thrives better on human blood than on any other. In captivity, however, it feeds readily on any warm-blooded animal, especially on birds, and if hungry may even be induced to feed on cold-blooded animals, such as the lizard or frog. But in the absence of man it may be remarked that as this species is a dweller on the banks of rivers and lakes, it comes much more in contact with large birds—cormorants and other water-fowl—and reptiles—crocodiles and monitors—than does *Glossina morsitans*. In Uganda before the natives were removed from the lake shore and islands doubtless they formed the chief supply of blood for the fly. On the other hand, after the natives had been removed inland or in places where there was no native population the fly had to adapt its diet to the available supply. One experiment made by us in Uganda in such a place showed that only 17 per cent. of the flies had fed on mammalian blood and 83 per cent. on avian or reptilian, and as far as could be made out twice as many of the flies had fed on reptiles as on birds. In such places the large lizard or monitor seems to be a favourite dish with this species.

Reproduction.—I need not go fully into the reproduction of *Glossina palpalis* as the process is the same as in *Glossina morsitans*. One point may be mentioned, however, and that is that in Uganda the former has a marked predilection for certain breeding grounds; these are sandy beaches along the lake shore backed by a belt of vegetation. The breeding grounds on Damba Island, for example, where some thousands of pupæ were collected every month for the laboratory, are formed of coarse sand and pebbles. It is 4 or 5 feet above the level of the lake, and the bush comes to within a few yards of the water's edge. The pupæ are found as a rule an inch or two below the surface of the sand at or near the edge of the belt of vegetation. For a long time we failed to find any wild pupæ, although days were spent in turning over soil and decaying vegetable matter in those places where the fly most abounds. At last their breeding haunts were discovered by Captain A. D. Fraser, R.A.M.C., to be in patches of sand at the edge of the lake. After this secret was discovered there was no lack. Our natives found them in large numbers. One day they brought up as many as 7000, and as I had promised a cent for each pupa brought up to the laboratory I had to pay out nearly £5 for them. These wild pupæ proved to be much healthier than those obtained from flies in captivity. The flies bred from pupæ born in the laboratory rarely showed any marked vitality; on the other hand, the flies hatched out from the wild pupæ found on the lake shore were fairly strong and vigorous, and lived in captivity for a couple of months or more. In conducting experiments with flies it is very necessary to work with laboratory bred ones, as the wild flies may be naturally infected with several species of trypanosomes. Numerous experiments went to show that there is no hereditary transmission of trypanosomes in tsetse flies, and there is no reason to believe that flies become infected by contact with infected flies or from fouled cages. Any trypanosomes found in laboratory bred flies may therefore be considered to be derived from the infected animal they were fed upon.

It will be seen from the foregoing that the two principal groups of tsetse flies—the *Glossina morsitans* group and the *Glossina palpalis* group—differ from each other in well-marked characters, the former living in wild, unpopulated districts and trusting to the wild game for their food, the latter along rivers and lakes which are usually thickly populated and trusting to man for a food supply, or in his absence living on the large reptiles, birds, and antelopes which frequent these places.

LENGTH OF LIFE OF TSETSE FLIES.

One word more in regard to the duration of life of tsetse flies. This is an important question, but one difficult to answer. The importance comes in when we have to consider how long a place may remain dangerous from the presence of infected flies. I remember at a meeting of the Royal Society when the question came up that the late Lord Avebury said he did not see any reason why a tsetse fly should not live for years. He had himself known an ant to live in captivity for some 15 years. Carpenter tried to solve the question by marking large numbers in a given spot and finding out how long the marked flies could be recaptured. One male was caught 199 days after it had been marked. Kleine states that he kept a fly in captivity for 227 days. If we put the life of the fly, then, at anything up to a year we may not be far out.

I have now given a sketch of the principal pathogenic trypanosomes in Central Africa, and also of their carriers, the tsetse flies. In my next lecture I shall proceed to describe more in detail the individual species of trypanosomes, beginning with that one which causes nagana.

THE USE OF MAGNESIUM SULPHATE IN THE TREATMENT OF TETANUS:

WITH AN ACCOUNT OF A SIMPLE APPARATUS FOR PHARYNGEAL INSUFFLATION.

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TETANUS, a frequent complication of the wounded in the present war, is a frightful disease. Horrible spasms torture fully conscious victims. Furthermore, it is the spasms which, at least in most cases, cause the fatal issue, by profoundly affecting the functions of respiration and circulation. Accordingly, a treatment which may offer nothing more than relief from these spasms ought to be of considerable importance.

The various experiences accumulated in the last nine years with the use of magnesium sulphate in sporadic cases of tetanus have established beyond a doubt that the spasms of tetanus can be relieved by the use of this remedy to a much greater extent than by any other method of treatment. Furthermore, in many cases of tetanus magnesium sulphate proved to be directly a life-saving remedy. Similar results were obtained with the use of Epsom salts in the extensive experience in the present war. However, by a study of the present numerous brief communications on this subject I became convinced that there is great necessity for a better understanding of the principles underlying this method of treatment, the various methods of administration and their indications, the possible danger due to the use of the magnesium salts, and the means for combating this danger. On the basis of an extensive experimental experience and a study of the clinical literature I formulated definite opinions regarding these various points, which I shall state here as briefly as possible, having in mind exclusively the practical side of our subject.

There are four ways for the administration of magnesium sulphate, each of which has a special action and consequently a special indication. They are: (1) Subcutaneous injection; (2) intramuscular injection, combined with inhalation of ether; (3) intravenous injection; and (4) intraspinal injection. Except for the intravenous injection, the magnesium salt ($MgSO_4 + 7\ H_2O$) shall be given in a 25 per cent. (molecular) solution. In sterilising the solution it must be kept in mind that if evaporation be allowed and not refilled with sterile water, the solution will be much more concentrated and the patient will therefore receive more of the salt. The injections should be made aseptically, or at least antiseptically.

1. *Subcutaneous injections.*—The dose should not be more than 2 c.c. and not less than 1·2 c.c. of the solution (25 per cent.) per kilogramme of body weight, to be injected four times in 24 hours. No massage. Light etherisation or a morphinisation should precede the injection of magnesium.

2. *Intramuscular injection and inhalation of ether.*—It is based upon the finding by Auer and myself that a moderate inhalation of ether increased considerably the efficiency of magnesium salts. Chloroform does not exert such an effect. The patient should be fairly well etherised, and 2 c.c. of a solution of magnesium sulphate (25 per cent.) per kilogramme of body weight be injected into the muscles of the thigh. At the end of the injection the thigh should be massaged and the ether anæsthesia continued lightly for about 20 minutes longer.

3. *Intravenous injections.*—The concentration of the solution should be about 3 per cent. (isotonic), and not more than 5 c.c. per minute should be permitted to run into the vein.

4. *Intraspinal injection.*—The dose to be injected, at the usual place of the lumbar region, should be 1 c.c. (of a 25 per cent. solution) for every 10 kilogrammes of body weight.

Subcutaneous injections exert their effects slowly. They cannot relieve immediately severe or dangerous spasms, but they exert undoubtedly a beneficent effect by cumulative action. Under their influence the spasms gradually become milder and less frequent, and the patient may eventually recover. Subcutaneous injections should be begun as soon as initial symptoms set in (local tetanus, slight trismus, &c.) and be continued throughout the disease. (In very young infants the dose should not exceed 0·8 c.c. per kilogramme of body weight.)

Intramuscular injections plus ether may relieve greatly even severe spasms in less than half an hour, but the beneficial effect is liable to pass off completely after two or three hours. On account of the local reaction which they produce the injections should not be repeated too frequently, and the method ought not to be used as a routine treatment. However, on account of the simplicity of the procedure it may be resorted to in severe spasms when for some reason other methods which are capable of exercising a rapid effect are not practicable.

Intravenous injections are capable of relieving dangerous effects of the spasms (tetanus of the diaphragm, constriction of the larynx) more promptly than any other method of application. But the beneficial effect may completely disappear in less than 30 minutes. Besides, by the use of this method the circulation may become affected also—by the direct action upon the myocardium. The use of this method of injection should therefore be reserved for emergency cases only, when quick action is urgently desired. Pulse and respiration should be guarded during the infusion of the solution; when the pulse shows softness or intermittence, or the respirations show shallowness, the infusion should be at once discontinued. Fortunately the ill-effects, if not permitted to continue too long, disappear quite soon after the infusion is discontinued.

Intraspinal injections may begin to show a definite relief from the spasms in less than half an hour after the injection, and after one hour the relaxation may be complete. The extent as well as the duration of the relief afforded to the patient is greater when the magnesium solution is given by the intraspinal method than by any other method of administration; the relief may last between 12 and 30 hours.

There is a fundamental difference in the mode of action between the intraspinal method and the other three methods of injection. The first acts by local application of the magnesium salts to the hyper-irritable parts of the central nervous system, requires only a small quantity of the solution, and the effect lasts a fairly long time. The other three methods of injection act through the circulation, require much larger doses, and the effect is either moderate and slow in its appearance or is of short duration. There is still another significant difference. The ill-effects upon the respiration caused by injections through the circulation are accessible to a fairly rapid correction by injections of calcium chloride and physostigmine (which will be discussed presently), while these injections have apparently no such beneficial neutralising effects when the respiratory paralysis has been brought about by an intraspinal injection of the magnesium solution.

As stated before, practically the only danger which may arise from an injection of an overdose of magnesium sulphate consists in a paralysis of the respiration. The paralysis is temporary, and when brought about by the administration through the circulation is readily reversible. In many instances an injection of 1·5 milligramme of physostigmine improves the respiration without interfering with the relaxation of the patient. A more reliable reversing effect is obtainable by an injection of calcium chloride. It may be given intramuscularly—30 or 40 c.c. of a 2 per cent. solution. By this method, which has the advantage of simplicity of procedure, the resuscitating action may not be as rapid as desirable; furthermore, it may at times bring back also the spasms, which is surely an undesirable result. The calcium chloride may be administered intravenously in a very dilute solution (0·2 $CaCl_2$ + 0·6 NaCl to 1000 of H_2O) injected slowly. As soon as an efficient spontaneous respiration is restored, which may occur in less than one minute, the infusion should be discontinued.

When the magnesium solution is given intraspinally in a dose of 1 c.c. (25 per cent.) for 10 kilogrammes of body weight to adults, as a rule nothing happens to the respiration. But if the respiration should exceptionally become shallow and slow, the first thing to do is to insert a needle in the spinal canal and let some of the fluid run out and then wash out the canal several times by a warm saline or Ringer solution. This should not be done when a reliable device for artificial respiration is at hand; the spontaneous respiration will return later without this aid, which has the disadvantage that it shortens the period of relief from the spasms.

I consider the pharyngeal insufflation as devised by me and described at the end of this paper, as a most reliable method of artificial respiration in man. Whenever possible, this apparatus should be at hand when a case of tetanus is to be treated. If this is not at hand respiratory paralysis should be treated by inserting a catheter through a tracheotomy wound deep into the trachea, which is to be connected with an oxygen tank. The catheter should be of a size which would fill out about two-thirds of the lumen of the trachea. The oxygen stream should be interrupted a few times in a minute for two or three seconds.

To summarise briefly. Any case of tetanus, mild or severe, should from the start to finish be treated by subcutaneous injections about every six hours with doses of magnesium sulphate as described before. Cases having severe attacks should receive in addition an intraspinal injection. This may be repeated when necessary, but the subsequent doses should be slightly smaller than the preceding ones. If the attack contains an element of immediate danger an intravenous injection may be administered as described above. When for one reason or another the intraspinal and intravenous injections are not practicable the intramuscular injection plus ether anæsthesia may be resorted to. When treating tetanus by magnesium sulphate preparations for artificial respiration ought to be made in order to be able to use efficient doses of the salt. The pharyngeal insufflation device is the simplest and most reliable method for this purpose. When this device is not at hand, then oxygen should be administered by the method of intratracheal insufflation through the tracheotomy wound. The treatment of the failing respiration should be begun at an early stage; asphyxia of the tissues would thus be avoided and a complete restoration could be attained early. The treatment of tetanus by magnesium does, of course, not exclude its serum treatment.

It ought to be borne in mind that unavoidably cases of tetanus will be met with which no method of treatment could cure, either on account of the presence of great amounts of toxin, fixed and free, or on account of the presence of several undiscoverable foci containing living bacilli. The failure to cure such cases should not militate against any method of treatment.

A Simple Apparatus for Pharyngeal Insufflation as a Reliable Method for Artificial Respiration in Cases of Emergency.

The occurrence of paralysis of respiration after intraspinal injections of too large a dose of magnesium sulphate has been the stimulus for looking for a reliable method of artificial respiration in human beings. It leads up, in the first place, to the now well-known method of intratracheal insufflation. This method, however, can at present be used only by experts and under favourable conditions. During the last few years, while serving on two Resuscitation Commissions, a method for artificial respiration has been developed by me which is easy to handle and reliable in its service. The principle of this method consists of blowing air into the pharynx. If this is done without further precautions, most of the insufflated air would escape through the mouth and through the nose, and would enter into the stomach. The prevention of the escape of air into the stomach is accomplished in our method in the first place by compressing the abdomen. The escape through the mouth and nose is readily prevented by blowing the air through a pharyngeal tube of a proper form and size. The insufflated air, or oxygen, enters therefore nearly exclusively into the lungs.

The mentioned apparatus consists, then, in the first place, of an appropriate pharyngeal tube (which will best be understood by seeing it in the apparatus) and a foot-bellows (or oxygen tank) which serve as a source for driving a continuous air stream into the pharynx. Between the foot-bellows and the pharyngeal tube a "respiratory valve" is introduced which regulates the inspiration and expiration by turning a ring with the thumb from side to side; when turning to the right the air is driven into the lung; by turning it to the left the air from the bellows is cut off, and at the same time an opening is made in the tube through which the escape of the expiratory air is accomplished.

The expiration is carried out through the elasticity of the over-distended chest walls. Between the bellows and the respiratory valve a T-tube is interpolated, which is supplied with a screw clamp on the vertical branch. When the pharyngeal tube is first introduced the T-tube has to *remain widely open;* but immediately after beginning of working the bellows and the respiratory valve the screw clamp should gradually be narrowed down until the chest shows a proper heaving. The mentioned parts of the apparatus should be kept connected and ready for immediate action. Besides these parts, the apparatus contains also a wooden board with belts for the compression of the abdomen; a tongue forceps, some tape, and a stomach tube, to be used in a manner which will be mentioned later. All these parts are collected in a handy small bag. The details and the working of the apparatus are very simple and by seeing the latter the description will be readily understood.

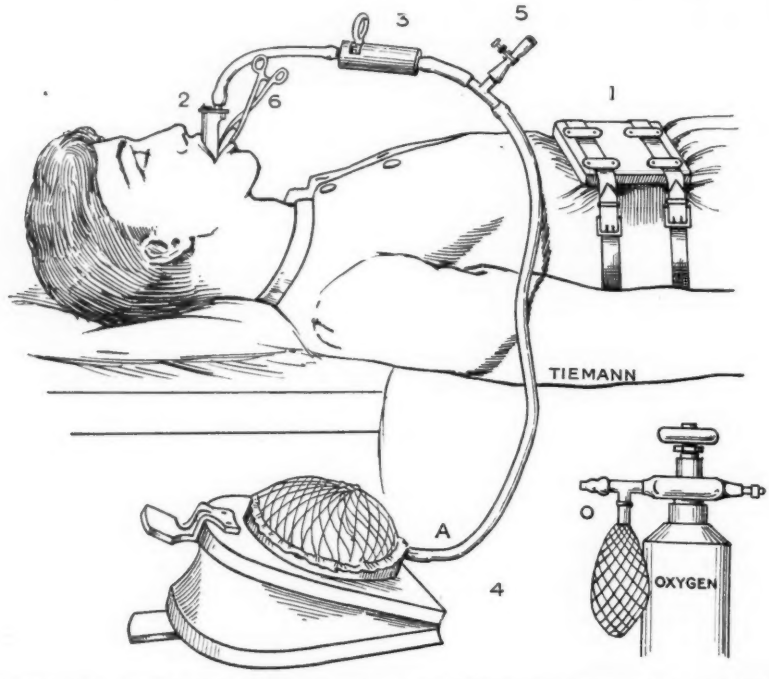
The order of procedure should be as follows: 1. The abdomen should be compressed by the small wooden board bearing belts. 2. The tongue should be pulled out by means of the tongue forceps. 3. The pharyngeal tube should be inserted as far back as the pharyngeal wall, with the lateral opening of the tube facing the entrance into the larynx. The tongue should then be fastened to the pharyngeal tube, but not too tight. By this means the entrance into the larynx is kept widely open, and the pharyngeal tube is kept safely in its proper place. The outer end of the pharyngeal tube should then be connected with the end of the respiratory valve which bears the lateral ring. The foot-bellows should be worked continuously, and the respiratory valve should be turned about 12 times per minute. The T-tube should be, as stated above, gradually compressed until a satisfactory heaving of the chest is established. The whole procedure of the establishment of the working of the artificial respiration need not last longer than one minute.

The anterior end of the pharyngeal tube bears an opening which is kept closed by means of a movable plate. Through this opening a stomach tube which fits into the hole can be pushed down until the fenestrated end of the tube is within the stomach. By the aid of this procedure all the air entering into the stomach may escape through this tube, and a very satisfactory artificial respiration may then be obtained even without the pressure upon the abdomen. (The rubber tubing connecting the various parts should be strong and not easily subject to kinking. When the source of pressure comes from an oxygen tank the T-tube should be interpolated between the respiratory valve and pharyngeal tube, to prevent waste of oxygen during expiration, while the rubber bag should be interpolated between the oxygen tank and the respiratory valve for the accumulation of the escaping oxygen during the period of expiration.)

The efficiency of this apparatus has been tested on a great number of animals of various species under complete paralysis from ether and curare without a single failure. It has also been tested in a completely paralysed human being with success. Furthermore, it has been tested in several human beings for the production of profound anæsthesia, and it proved to be absolutely satisfactory even in temporary suspension of respiration.

The pharyngeal insufflation apparatus for artificial respiration can be handled with ease by laymen after slight instruction.

The apparatus, which is made for me by Messrs. George Tiemann and Co., of New York, can be used, of course, for any other emergency case of paralysis of respiration. But it is here especially recommended to have such a reliable and easily handled apparatus on hand when magnesium sulphate is used for the relief of tetanus; then an efficient dose of the salts may be administered without the fear of the consequence of an accident of paralysis of respiration.



Apparatus for artificial respiration by pharyngeal insufflation. 1. Abdominal pressure pad. 2. Pharyngeal tube. 3. Respiratory valve. 4. Foot-bellows. 5. T-tube with a screw clamp, interpolated between the respiratory valve and the foot-bellows. Pharyngeal tube, respiratory valve, T-tube and foot-bellows should be kept connected by means of good rubber tubing which does not kink. The apparatus will then be in readiness for immediate application. 6. Tongue forceps and tape (or gauze bandage) for tying the tongue to the pharyngeal tube.

Oxygen may be used by attaching the tube (A) to a cylinder of the compressed gas (O) in place of the bellows (4).

A CONTRIBUTION TO

THE STUDY OF THE ETIOLOGICAL FACTOR IN SO-CALLED CEREBRO-SPINAL FEVER.

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THE following paper, the gist of which has already been communicated to the Reading Pathological Society, is the result of observations made during the outbreak of cerebro-spinal fever in Reading. During this epidemic I have examined the cerebro-spinal fluids from about 70 cases, many of which I have seen in consultation with the patients' own medical attendants or on behalf of the Reading sanitary authority.

It has been my great regret that I have had to forego many valuable opportunities for research in relation to this disease. Owing to pressure of work, both military and civil, however, and want of adequate laboratory assistance, I have had my hands full to get through even the routine work. I offer this as an apology for the imperfections in my paper. I would further take this opportunity of saying that any hypothesis put forward by me is based on very scanty grounds, which at a more opportune time must later be carefully examined and amplified. It may then be found that my assumptions require considerable modification.

At the outbreak of this disease I believed, like many others, that the meningococcus of Weichselbaum was responsible for the disease, and, indeed, in every fluid which I have examined a Gram-negative diplococcus has been found and a positive diagnosis made. As has been the case with other workers, I soon noticed that other organisms were present in films made from the centrifuged deposit whose nature puzzled me, especially as in the few cases (five) in which I made cultures from the fluid growths were obtained of what were apparently typical meningococci. These unknown organisms were sometimes coccal in form and Gram-positive. Others were slender Gram-negative rods, while still others, stained by Gram, consisted of minute Gram-positive dots placed a short distance apart as if at either end of a short bacillus. The body of the bacillus was sometimes represented by a faint Gram-negative rod. As a rule this was absent and its apparent site was then represented by a thin streak slightly lighter than the surrounding film. Occasionally one could see masses of these which looked like débris with minute dots interspersed at more or less regular intervals. Occasionally also could be seen several of these dots placed in line at regular intervals from each other, suggesting that there might have been a fine filament connecting them.

With a view of obtaining organisms from the blood of cerebro-spinal cases I withdrew a few cubic centimetres of blood from the median basilic vein of 12 patients at various stages of the disease. The blood was citrated, at once placed in nutrient broth with a + 10 reaction, and incubated for several days. An interval of two or three hours elapsed between the sowing of the tubes and their arrival in the incubator. No growth, to the naked eye at least, took place in any. Subcultures were made on an egg-agar medium devised by workers at the Lister Institute, who kindly gave me the formula. No apparent colonies were grown on these, but owing to the somewhat greater opacity of this medium as compared with ordinary agar it is possible that very minute colonies were missed. This is the more likely as films made from certain of the incubated broth tubes revealed a few organisms more or less similar to what I have described as present in the cerebro-spinal fluid films. It is also possible that while the organisms may have been present in the blood they had not sufficient vitality to continue their existence in artificial media. For more elaborate attempts to recover the organisms seen in the spinal fluid I had no time.

On April 16th I was asked by Mr. E. G. March, of Reading, to see the following case in consultation with him.

CASE 1.—The patient, a young woman, consulted Mr. March on Dec. 14th, 1914, because of an oblong swelling over the extreme surface of the lower part of the left forearm. Naturally it was considered to be a ganglion. The patient showed no signs of tuberculous taint and, indeed, looked unusually strong and healthy. Later Mr. March ascertained that for two months previously to consulting him she had suffered from diarrhœa. On Jan. 4th, 1915, another swelling appeared on the forearm. This was burst subcutaneously under digital pressure. On Feb. 16th the patient took to bed with gastric symptoms. The abdomen at that time was distinctly distended and there was a good deal of flatulence. The temperature was 102° F. in the evening. The urine was of a mahogany colour, but beyond a fairly large amount of indican it contained nothing abnormal. About this time the breathing became rather short, and fluid appeared at the right base with signs of consolidation. The patient complained of pains in the legs and ankles and showed a pyæmic type of temperature. The right lung soon cleared up, but similar signs then appeared in the left lung. Mr. March suspected pus, the infective agent probably having entered through the intestinal tract. Meantime other "ganglia" appeared in various parts of the arms.

On April 17th I made a leucocyte count and found 20,000 leucocytes per c.mm. Of these, 73 per cent. were polymorphonuclear neutrophils. A suggestion was made that the condition was an infective one, and that in view of the history one of the so-called ganglia should be opened and the contents examined. On the 23rd a similar swelling appeared on the tongue. The temperature then dropped to normal, but the pulse remained quick. The ganglia were then opened under an anæsthetic and blood-stained pus was found in every one. I was present at the operation and planted on glucose-agar tubes some of the pus taken direct from the swellings. The leucocytes now numbered about 15,000 per c.mm. The subsequent history so far is that since the operation, now some weeks ago, she has suffered from slight sickness and recently has complained of marked giddiness on moving the head. Pain in the occipital region is marked.

The case was one apparently of pyæmia, with a history of preceding gastro-intestinal disturbance, followed by a prolonged illness, in the course of which we find a high relative and absolute increase in the polymorphs, together with headache, giddiness, and sickness in the later stages. There seems at first sight nothing very much out of the common here, and yet when I came to examine the pus, expecting to find one of the ordinary pyogenic organisms, I received my first surprise. Before referring further to the organism I shall only say that I kept it living by frequent subculture until I had more leisure to investigate it. The desire to make further investigation came with the appearance of the second case, which I shall now briefly describe.

CASE 2.—On May 11th a patient was admitted to the Royal Berks Hospital under Major G. S. Abram, R.A.M.C. (T.), with a history that three days previously he was seized with severe persistent headache. There was no history of previous illness beyond the fact that for six years he had suffered from a discharge from the left ear. The temperature was 100·4° F., the pulse-rate 120 and regular, and the tongue was thickly furred. On examination of the

ear a slight discharge was seen coming from a small perforation in the membrane; no mastoid pain; teeth very filthy. On the 15th the patient still complained of headache; the pupils were dilated but equal; and there was tenderness in the neck and shoulder, but none over the spine. He could bend his head freely on the chest. There was no Kernig sign. Cerebro-spinal meningitis was suspected, and about 25–30 c.c. of very clear fluid were allowed to escape by lumbar puncture. This was examined in the usual way by making films from the centrifuged deposit. Gram-negative diplococci were found, together with the other unknown forms above mentioned. He was given 15 c.c. of anti-meningococcal serum. On the 17th I withdrew a few cubic centimetres of blood from the median basilic vein, sowed them immediately in about 20 c.c. of ordinary + 10 broth, which was placed at once in the incubator. There was no apparent growth next day, and subcultures were made on 1 per cent. glucose agar. These remained apparently sterile. Subcultures on to fresh 1 per cent. glucose-agar tubes were made on each of the four following days. I kept subculturing because in films made from the broth organisms appeared to be present. On the sixth day I obtained a growth on the agar slope inoculated the day before and shall describe this organism further on. On the 18th there was a slight manifestation of Kernig's sign. The plantar response was flexor, but the knee-jerks were absent. On the 25th a slight systolic bruit was noticed. Next day four teeth-stumps were removed under cocaine. The leucocytes now numbered 15,000 per c.mm. On the 27th the patient became very delirious and attempted to get out of bed. A vaccine made from five different strains of meningococcus which I had isolated during this outbreak was injected. Next day a small dose of an autogenous vaccine made from the patient's own organism was given. On the 29th the abdomen became tumid and the patient rapidly became worse and died.

Post-mortem examination.—The brain and cord showed marked congestion of vessels in the meninges, with some opacity along the larger vessels; a layer of pus on the under-surface of the left temporo-sphenoidal lobe, which also contained a small abscess; and turbid fluid, but no excess in the ventricles. No abscess in the cerebellum. No definite pus in relation to the cord, which was very soft and congested. Skull: Advanced disease of the left middle ear with a perforation through the tegmen tympani, these parts being bathed in pus, while in the middle ear yellowish-white material of a cheesy consistency was found. Otherwise the bones of the skull were apparently normal. Heart: The pericardium contained a larger quantity than usual of turbid fluid. Ante-mortem clot was present in the right auricle. The tricuspid and mitral orifices admitted the tips of four fingers respectively. The myocardium was pale and friable. No vegetations were found. The coronary vessels were healthy, but slight atheromatous change was seen in the aorta in the neighbourhood of the coronary openings. The vessels otherwise apparently were healthy. The bronchial glands were enlarged, hæmorrhagic, and soft. There was a small amount of turbid fluid in each pleural cavity. No sign of tubercle. Small hæmorrhages were found all over the surface of the right lower lobe. In the left lower lobe was found a small whitish nodule which, on being incised, was found to contain pus. No signs of pneumonic consolidation. Abdomen: Liver pale and friable. The kidneys were pale and showed cloudy swelling. No enlargement of the cortex. No hæmorrhage into kidneys or suprarenals. The spleen was enlarged, weighing 1 lb. 6 oz.; no infarcts; no hæmorrhages, but the pulp was very soft and very diffluent. The stomach, small intestine, and appendix apparently were healthy. The colon was greatly distended and contained some light-coloured stools; the mucous membrane showed patches of congestion, but no hæmorrhages and no evident ulceration. Pancreas normal; lumbar and mesenteric glands enlarged; bladder and ureters normal. Muscles: There was a large hæmorrhage into the muscles of the abdominal wall immediately in front of the bladder, into the right iliacus and extending round to the muscles on the right outer side of the pelvis, causing pressure on the right sciatic nerve. The hæmorrhage was probably several days old. A similar but smaller hæmorrhage was found into the muscles of the abdominal wall near the left costal margin. The inguinal glands were enlarged, as also were the glands in the right axilla. These latter were also markedly hæmorrhagic.

The case was remarkable for the high temperatures reached during the illness, 105·8°, 106°, and 106·8° occurring several times, preceded by rigors. This patient during life showed signs and symptoms of cerebro-spinal meningitis, and a Gram-negative diplococcus was found in the cerebro-spinal fluid. Post mortem, however, a temporo-sphenoidal abscess with caries of the temporal bone was found, together with hæmorrhages into the muscles and evidence pointing to septicæmia, borne out by the recovery of an organism or organisms from the blood.

The first point I wish to make is that these two cases, though essentially very different in their history, are nevertheless due to the same infective agent. I am quite aware that the first case, until recently at any rate, never showed any symptom suggestive of cerebro-spinal infection, and that the second case, while showing symptoms of meningococcal infection, will be attributed by some to ordinary middle-ear disease, followed by an abscess in the brain, and I am well aware of the fallacy that may here enter into my argument. However, since completing the preliminary work for this paper, I thought it well to look up recent numbers of the medical journals, and I have received support—or so I think—from papers published on the etiology of the disease,[1] for, so far as I can gather, the organism which I shall now describe appears to be similar in many respects to that described in those papers.

The agar tubes inoculated with pus from the abscesses in Case 1 showed no growth for several days, but about the fourth or fifth day minute colonies were found on the agar. Films made several days later from these showed the most extraordinary diversity of form—club-shaped, pear-shaped, point of exclamation-like, Gram-positive bacilli; small diplobacilli resembling Hoffmann's bacillus; and Gram-positive cocci occurring in pairs or singly with occasional Gram-negative rods and cocci. In addition to these could be seen the small black dots already referred to. Films made from the pus direct showed practically all these forms, the club-shaped bodies apparently having a Gram-negative tail. These cultures were simply kept going for further investigation when Case 2 turned up. I have already described the steps taken to obtain a growth from this case and was surprised to find that the colonies were similar to those of Case 1 when they appeared first. On making films from these I was at once struck by the general resemblance of the organisms to those isolated from Case 1. There were slight differences which I shall describe further on.

Cultural characters.—Owing to the extreme diversity in appearance of the organisms a series of plates were inoculated from each of the two cultures. Within 24 hours on 1 per cent. glucose agar there was a copious growth of colonies on each series of plates. At this stage they were all indistinguishable. They consisted of very minute pin-point colonies, discrete for the most part, with apparently a regular margin, and were rounded or slightly oval in shape. With a low objective they appeared to be homogeneous and granular. They were so small that unless the agar was very clear they could quite easily be missed. Incubated further these colonies grow larger and may attain in a few cases a diameter of about 0·5 to 0·75 mm., though the majority remain smaller.

[1] Hort, Shaw, and others: Brit. Med. Jour., March 27th and April 17th and 24th, 1915.

On examination of the larger colonies after several days' incubation, the impression is gained that there are two kinds.

In cultures from Case 2 the colonies were rounded or oval, with a slightly more opaque dot in the centre. The majority had a fairly regular margin, and by the aid of a hand lens the colony looked as if it had a slightly more opaque centre surrounded by a lighter zone, which in turn was surrounded by another rim of the same opacity as the centre. While the majority showed this form there were others which had a distinctly crenated margin. On examination with a low objective they presented the same granular appearance as the former colonies, but differed in that the edge was distinctly "scalloped." The larger colonies were very flat and occasionally a very slightly prominent central boss could be seen. When several days old both types of colony have a dry, glazed appearance.

Colonies from Case 1 showed under a low objective exactly the same granular appearance. When older it was found that the majority did not preserve a smooth unbroken edge. The margin began to show crenation, and in old cultures the edge was very markedly serrated; so much so that there appeared radial divisions running well into the interior and giving the edge a feathery appearance. At the same time there were interspersed with these colonies a few which preserved the smooth edge and were then exactly like the majority of the colonies of Case 2. Except for the feathery edge, colonies from the two cases could not be distinguished with a low-power objective. No growth occurred at room temperature.

Cultures from Case 2 in + 10 nutrient broth after many days' incubation showed a deposit of whitish particles at the bottom and sides of the tube and a slight uneven scum floated on the top. Broth cultures have not yet been made from Case 1. In the water of condensation in agar tubes from Case 1 and Case 2 respectively could be seen minute particles suspended in the liquid. Saline emulsions made from the two cultures differed slightly. That made with a culture from Case 1, while becoming very slightly opalescent, was characterised mainly by the suspension in it of many minute particles or granules. Similar particles were seen in emulsions from a culture in Case 2, but they were not so numerous and the fluid was more opalescent. The same difference was observed in spreading films. The culture from Case 2 seemed to emulsify easily with only a few granules in it, while in that from Case 1 there were more granules and a homogeneous mixture was not obtained. Both cultures suggested the appearance observed in making films from diphtheria cultures, especially that of Case 1. Glucose and saccharose serum peptone water tubes were inoculated from the original cultures from both cases, with the result that glucose in each case was rendered acid while the saccharose remained unaffected. Milk was apparently not clotted by the organism of either case. Cultures were made anaerobically, but no growth was apparent after two days' incubation. Similarly, no apparent growth was obtained after sowing on ordinary + 10 agar and incubating at room temperature. Stab culture in glucose agar showed small granules and discs along the needle track. The organism is fairly long-lived.

Morphology and staining reactions.—Films were made from isolated colonies obtained by plating out and from agar cultures raised from a single plate colony of each of the two types mentioned as occurring in cultures from each case. Gram's and a slightly modified Neisser's stain were employed. A film from a smooth-margin colony from Case 1 showed short and sometimes rather thick Gram-positive rods often occurring as diplobacilli, arranged frequently parallel to one another in small rows. They varied in size and in the intensity with which they retained the Gram stain. They recalled at once the appearance of Hoffmann's bacillus. Others again were club-shaped, or in shape like a point of exclamation. Others appeared to be Gram-positive diplococci of various sizes, sometimes resembling the meningococcus in shape; in other cases the two elements composing the diplo were unequal in size, and sometimes one was Gram-positive while the other was Gram-negative, and occasionally the staining was indefinite. Sometimes these cocci lay singly and then were often oval in shape or slightly pointed at one end. Other diplococci were exceedingly minute, no more than mere specks, and these frequently stained a faint red with Gram and often appeared to have a halo around them. Some appeared to be beaded bacilli, the intermediate parts taking a lighter tint of the Gram. In addition many of the minute Gram-positive dots already referred to were seen, sometimes with a faint red stain joining them; in other cases this connexion was not evident.

In films made from a 12-hour agar growth in addition to the above a short thin Gram-negative rod was seen which sometimes showed strips of a slightly darker red occurring in it. Others had a minute Gram-positive dot at each end. Occasionally also a faint Gram-negative diplococcus was seen. Films from an agar growth raised from one of the smooth-margin type from the culture in Case 2 showed practically the same appearance. Neisser's stain applied to films of the above strains grown on Lorrain Smith's medium showed many bacilli more or less closely recalling Hoffmann's bacillus and staining a uniform red. Others looked exactly like meningococci, while others were short rods with a black bead at each pole. Some were slightly club-shaped and showed black bars transversely to the long axis. While these beaded or barred forms were seen the majority stained red, and in the case of films from the culture in Case 2 while barred forms were seen the majority were coccal, ovoid, or diplobacillary in shape.

Films made from agar cultures raised from one colony of the feathery-edge type from the culture in Case 1 showed forms indistinguishable from the Klebs-Löffler bacillus, with the difference that the film although made from a young culture looked as if it were made from an old diphtheria culture with abundant involution forms. Any illustrated text-book showing involution forms of the diphtheria bacillus will give an idea of what was found here. It is to be noted, however, that along with these forms was found also an occasional thin Gram-negative rod; often a Gram-negative rod lay beside a Gram-positive one. Also a few very small Gram-negative diplococci were seen.

Practically the same appearance was got in films made from a culture raised from a single crenated colony from Case 2. When stained by Neisser it would at once be said that they were films of the Klebs-Löffler bacillus. The smooth-edged type of colony, therefore, would appear to contain a larger proportion of the Hoffmann element, while those with crenated margins had more of the Klebs-Löffler element. In both, however, occasional Gram-negative

rods and Gram-negative and positive diplococci and ovoids were seen. When film preparations were made from glucose serum peptone water it was surprising to find the large and irregular forms on the whole absent. The majority were very short diplobacilli, and films made from the two cases could scarcely be differentiated.

Animal inoculations.—White mice were inoculated on May 27th with 1 c.c. of an emulsion in sterile saline of a 12-hour agar culture made from each of the two cases described. For each case two mice were used, one for intraperitoneal and one for subcutaneous inoculation.

Within 20 hours one of the mice inoculated with a culture from Case 2 was dead. The other mouse from the same case appeared to be all right. On the 30th it appeared to be very ill; it maintained the same position all the time, back arched convexly outwards, head touching floor and trembling slightly. On causing the animal to move the trembling became more marked and it walked slowly, dragging one leg after the other. The mere act of touching the animal appeared to increase the tremors. On the 31st it was found dead. One of the two mice inoculated with a culture from Case 1 was found dying within 20 hours. It was lying on one side with its back arched, head down, and toes clenched. Nothing definite was found post mortem. The other mouse inoculated from the same case is still alive and well.

The three mice died from a general septicæmia as the organism was recovered from the heart blood. Films made from the peritoneal fluid, in addition to the variety of form of the organism inoculated, showed large numbers of small Gram-negative diplococci bearing a resemblance to meningococci, also very minute negative diplococci and Gram-negative rods occurring both singly and as diplos. Practically the same findings as in films made from cultures, with the exception that there were many more Gram-negative diplococci.

Two rabbits were inoculated on the same date intravenously with 4 c.c. of the same cultures used for the mice. These rabbits are still well, but seem slightly thinner than they were. Two small guinea-pigs were inoculated on June 2nd subcutaneously into the skin of the abdomen, each with an emulsion in 3 c.c. sterile saline of one agar slope from each case respectively. The age of the agar culture was 20 hours. Both animals are still alive, but that inoculated from Case 1 has some œdema of the lower part of the abdomen, while round the site of inoculation the skin is hard, irregular, and tender on pressure. The hair has disappeared from the part and it looks leathery.[2]

I have said that in every case of cerebro-spinal infection I have found a Gram-negative diplococcus. In every one also I have found two or more of the types of organism just described. In view of that I have stained many of my spare films made from different cases examined during the last three months and have found definite diphtheroid rods present with beading and sometimes with bars. In Gram films made from the various blood cultures in which I was unsuccessful in finding a growth I have been able to distinguish in addition to Gram-negative diplococci one or more of the forms above described. They were evidently present in the attempted cultures and may have grown to a certain extent, but for some reason or other subculture did not succeed. I have found the same types of organism in films made from pus from cases showing definite meningitis. In three cases I have examined catheter specimens of urine, and in two by culture have got the same type of organism. The third one was only examined by film preparations made from the centrifuged deposit and showed again Gram-negative diplococci as well as one or more of the other types. I have observed apparently the same organisms in films made from a case of irregular pneumonia. In this case there appeared to be much larger club-shaped bodies, many with a longer tapering extremity. The same curious variety of form has been got in films and culture from the heart blood after passage through mice.

The factor common to all the fluids and purulent exudates which I have examined is the invariable presence of diphtheroid rods together with Gram-positive and Gram-negative diplococci. All these various types of form have been reproduced in cultures from Cases 1 and 2, and while in culture the Gram-positive elements preponderated, yet on passage through mice large numbers of Gram-negative diplococci were obtained in the peritoneal exudate. These two cases, therefore, I regard as due to the same infective agent as is responsible for the present epidemic, notwithstanding that Case 1 is different from anything I have seen described as due to the meningococcus, and in spite of the fact that Case 2 was complicated by middle-ear disease.

The second point which I now wish to make is this, that in the disease termed "spotted" fever, or cerebro-spinal fever, the causal organism is a pleomorphous diphtheroid rod closely akin to the Klebs-Löffler bacillus, if not a variant of that organism. It is rather fitting that in "spotted" fever, or cerebro-spinal fever, which is characterised generally by the absence of spots, and the absence of typical meningitis in the majority of cases, the paradox should hold good with regard to the etiological factor, so that meningococcal infections are not really due to the meningococcus at all, but rather to an extremely pleomorphous organism. There are various reasons for making this statement, one of which has already been given. Others may briefly be referred to. It has always been a puzzle why such an extremely delicate organism as the meningococcus should be capable of transmission even through a hypothetical series of intermediaries from one case to another frequently at very considerable distance apart. The suggestion now is that we are dealing really with a pleomorphous organism and that the infection is transmitted, not by the meningococcus as such, but by another form in the life-history of the organism which is pretty robust and capable of surviving for considerable periods of time and even under adverse conditions. This form I believe to be a diphtheroid one, although it is always possible that, as Hort and others suggest, there is an ultramicroscopic form. I would put it another way and say that it is probably transmitted in the same way as diphtheria. Subject necessarily to verification by subsequent rigorous investigation I believe the organism to be highly pleomorphous. It would be an extraordinary coincidence if in all these cases whose fluids or exudates I have examined a combination of more or less the same types of organism should be present. Further, the very careful and painstaking efforts of Hort and others to separate out the various forms have met with no success. The explanation is probably to be found in the fact, not that the cultures are impure, but that the organism undergoes various metamorphoses according to circumstances whose nature we do not yet understand. This seems a reasonable explanation in view of the fact that in film preparations great differences in form and staining reaction are frequently evident in the two elements composing a

[2] This animal has since died.

single diplococcus or diplobacillus. Further, we know how extremely pleomorphous is the familiar Klebs-Löffler bacillus, especially in older cultures, and also how in apparently pure cultures of the meningococcus variations in staining, in size, and even in shape have been described. The feature common to both the diphtheria bacillus and the meningococcus, hitherto accepted as being pure strains, is their tendency to variation, more especially of course in the case of the former organism. This plemorphism suggests that after all Hoffmann's bacillus may be merely one of the many forms of the true Klebs-Löffler bacillus. Further, the hypothesis which I suggest would explain to a certain extent the reason for the discrepancies and frequent failures met with in serum treatment.

If the so-called meningococcus is merely a phase in the life-history of a diphtheroid organism we can understand the effect on the patient of a serum such as Flexner's. Temporary benefit may be expected to follow as a result of its action on the meningococcal forms. The other and presumably the more resistant diphtheroid forms are left uninfluenced. The effect of this wears off, and the patient may be again benefited by the introduction of serum, and so the process goes on until his own tissues overcome the other forms of the infecting organism or until death occurs. My suggestion is that an antidiphtheroid serum or vaccine, or even an antitoxin analogous to diphtherial antitoxin, may be found to exert a greater influence on the course of the disease than the present antimeningococcal serum, which probably only acts on the so-called meningococcal forms. Further, I would make the suggestion that, if this assumption is correct, the life-history of the gonococcus must be reinvestigated, for, owing to the similarity between the gonococcus and the meningococcus, one might reasonably expect to find a diphtheroid form of the urethral coccus as well. As a matter of fact, various diphtheroid rods are known to be found in that region. It would further explain the very disappointing results obtained by the vaccine treatment of gonorrhœa. The gonococcus may disappear for a time, but returns again, because the vaccine has no effect on the presumably more resistant diphtheroid forms.

If the views above enumerated are correct it would further go to prove the comparative uselessness of examining contacts merely for meningococci. The want of uniformity in the results obtained suggests either errors of technique or the fact that the meningococcus is not always present in the throat as such, but may exist in another form.

Further evidence could be adduced if space permitted in support of the analogy between the manifestations of the disease in the present epidemic and those met with in diphtheria, especially the more malignant forms of it. Within broad limits, seasonal prevalence, presumably incubation period, mode of onset, occasional appearance of rashes, hæmorrhages, and occasionally subsequent paralyses are common to both. The analogy between the two diseases has been remarked upon by several observers both in this and other epidemics. Many of the victims subsequently develop heart affections, and I have now post-mortem notes before me of a case in which the patient died suddenly from heart failure when he was apparently convalescent. Another feature found frequently in cases of diphtheria, as in the epidemic with which we have been dealing, is the comparative slowness of the pulse in relation to the temperature curve. Clinically, in the epidemic mentioned we have seen cases presenting the most diverse symptoms, and many patients must have recovered or died with a wrong diagnosis. I believe the statement quoted by Sir William Osler[3] to be probably very near the truth —viz., that in 2 per cent. of apparently healthy people the diplococcus may be found. I would suggest substituting the words "infective agent" for "diplococcus." Finally, might I make a suggestion that the local epidemics described by McGowan[4] as occurring in industrial schools in Edinburgh and elsewhere may actually have been due to a diphtheroid infection of the type suggested by me and not to a combination of atypical pneumococcal infection occurring in boys the subject of endemic status lymphaticus.

To sum up, I would suggest that the causal organism of the epidemic dealt with in this article is a diphtheroid rod closely related to the Klebs-Löffler bacillus, of which, indeed, it may actually be a variant, and that we are witnessing, as Sir William Osler says, the struggle of a new disease to win a place among the great epidemics of the world. This diphtheroid rod is an extremely pleomorphous organism and may give rise to Hoffmann-like forms, to what appear to be meningococci, &c. It is probably very widely spread in nature in one of its more resistant forms, and it is this form and not the meningococcal one which is transmitted from one to another. It is also probably to be found more frequently among individuals than we imagine. The disease may give rise to the most diverse symptoms, evidently due to an actual invasion of the body by the infective agent, and not merely to the action of toxins manufactured locally. It is in this respect that it differs from diphtheria as we understand it. In other ways, however, there is a certain similarity between the two diseases.

The above hypothesis offers an explanation why sera fail so often in the treatment of so-called cerebro-spinal meningitis, and the analogy to diphtheria suggests that treatment on similar lines should be adopted. It further suggests that fresh investigation must be made into the life-history of the gonococcus, and offers an explanation of the failure of vaccines in that disease.

I am aware that much of the above is open to criticism, but I have already stated that fuller investigation remains to be done when times are more normal than they are at present.

PS.—Since writing the above I find that I have succeeded in obtaining a growth directly from the cerebro-spinal fluid of a fatal case which was otherwise quite healthy and where there was no middle-ear disease. I have also obtained a growth from the blood of another case sent me by a pathologist, and I have seen organisms, morphologically similar to those described, in films made from the pleural fluid. These facts are further evidence in favour of the sameness of the organism causing the present epidemic.

Reading.

[3] Brit. Med. Jour., Jan. 30th, 1915.

[4] Endemic Febrile Illness with Rapidly Fatal Cases Occurring in a Boys' Industrial School, Proceedings of the Pathological Society of Great Britain and Ireland, January, 1913, p. 412.

HEALTH OF NEWQUAY (CORNWALL).—Dr. A. Hardwick, the medical officer of health of Newquay, in his twenty-sixth annual report, states that during 1914 the death-rate was 10·2 per 1000; the birth-rate was 11·0 per 1000. Newquay has increased rapidly, probably more so than any other town in Cornwall. In 1871 the population was 1121, and now it is estimated at 4850.

SEVERE CASE OF

INTRACTABLE SYPHILIS TREATED SATISFACTORILY WITH HECTINE.

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Private ——, aged 30, was admitted to the Military Hospital, Rochester-row, London, S.W., on Sept. 19th, 1914, suffering from a large perforation of the hard palate. He was placed on the syphilis register after giving the following history.

History of case.—The patient, a reservist, had been a very heavy beer drinker. In November, 1910, he developed a hard chancre on the penis. He did not seek medical advice, however, until after the chancre had been present for three weeks. He then consulted a civilian doctor, who commenced a course of mercurial treatment comprising pills and medicine by the mouth. This he continued for six months. Three weeks later, having abandoned his treatment, a rash appeared on the trunk, arms, and legs, which he described as dry and scaly. The patient then went to a large general hospital when scabies was diagnosed, and he was given sulphur ointment supplemented by sulphur vapour baths, and the rash gradually disappeared. In 1913 (two years ago) a "lump" appeared in the centre of the hard palate. He attended the Mildmay Mission Hospital, when he was again given mercurial pills and mouth wash. He continued his work for four months, and the condition seemed to improve. The gumma, however, for such it was, did not discharge nor was the surface broken. Eight months later (approximately one year ago) the gumma again commenced to increase in size. This he reported to the Mildmay Mission Hospital. It had now broken down and was discharging profusely. Mercurial treatment was resumed, but the ulcer progressively got worse for a period of six months. An operation was now suggested for the removal of the necrosed bone. At this date, however, he was called up to the colours as a reservist, and after completing one month's service (including three weeks in France) he was sent to the Rochester-row Military Hospital for treatment.

Condition on admission.—The patient was in a flabby, unhealthy condition, presenting an oval perforation of the hard palate roughly the size of a shilling, through which was exuding a foul yellow discharge, and his breath was very foul. There were no external gummatous changes elsewhere about the body. The nervous system was unaffected, as evidenced by normal reflexes. Weight, 12st. 4½lb. There were no albumin and no signs of hepatic cirrhosis. The heart and chest were normal.

Treatment.—A combined course of salvarsan intravenously, accompanied by mercurial injections intramuscularly, was decided upon. Accordingly the patient was given three intravenous injections of 0·9 grm. neosalvarsan, administered at intervals of a fortnight, accompanied by ten weekly injections of 1 gr. mercurial cream, during which course his weight dropped to 11st. 3lb. He was now put on pot. iodid. gr. 7 three times a day and daily inunctions of ung. hydrarg. drm. 1. The pot. iodid. was gradually increased until 15 gr. four times a day were tolerated without any ill effects. The discharge through the perforation, however, was so foul that the patient had to be isolated. The perforation gradually increased in size—this three months after admission to hospital. The following necrosed pieces of bone were removed during this period at intervals: the whole of the vomer, the perpendicular plate of the ethmoid, and the palatal process of both the palate and the superior maxilla of the right side. The Wassermann reaction was positive. It was now deemed advisable to adminster an injection of 0·6 grm. of the original salvarsan, which was tolerated without any reaction, pot. iodid., now 20 gr. four times daily, accompanied by daily mercurial inunctions, being continued. For about ten days the destructive processes appeared to be no longer progressive. The patient now developed alarming attacks of vomiting, and so a diet consisting of small quantities of milk at short intervals was resorted to. The lower lid of the right eye became very œdematous, accompanied by almost alarming protrusion of the palpebral conjunctiva. It was considered possible that the patient was being overtreated and a rest of two weeks was ordered, during which time, however, the œdema, if anything, became more marked. No exophthalmos. Vision in that eye was rendered impossible, unless the lids were separated. The sight then, however, was found to be normal. The lacrymal duct was occluded, and bony crackling could be demonstrated when pressure was made over the right lacrymal bone, in which region a discharging sinus appeared. The first molar tooth on the right side was extracted from the upper jaw, and the antrum, which now possessed no inner wall, thoroughly irrigated. Necrosed bone was at the same time removed, comprising the outer wall of the alveolar process and part of the malar bone, thus opening up the antrum external to the alveolar process. A leech was applied to the œdematous lower lid followed by fomentations for six hours, which reduced the swelling very satisfactorily.

At this stage it was decided to try a course of hectine injections, with which the French syphilogists have claimed such good results. Accordingly ten subcutaneous injections of 0·2 grm. were given, the first three on alternative days followed by seven daily injections. The patient's condition commenced to improve almost at once and the vomiting ceased. The discharge became less, and the appetite improved. Nobody was more impressed than the patient himself, who at this period had become very despondent. In the first week his weight increased 7 lb., and at the end of the course of ten injections he was allowed to sit up.

Encouraged by the very satisfactory results of this first course of ten injections, a second course was commenced on March 11th, 1915, comprising ten daily subcutaneous injections of 0·2 grm. hectine in the buttock. During this course the patient increased in weight by 7½ lb. After a fortnight's rest a third course, also comprising ten daily subcutaneous injections, was administered, during which he increased exactly 5 lb. The gross gain in weight from prior to the hectine courses is indicated by the increase from a minimum of 10 st. ¾ lb. up to 12 st. 8 lb.—i.e., 2 st. 7¼ lb.

Present condition.—As can be surmised from the increase in weight, the general condition of the patient now is extremely satisfactory. His appetite is normal, and he takes his daily exercise round

the hospital quadrangle; he is anxious to resume general duties. The huge cavity resulting from the total destruction of the structures comprising the nasal fossæ is lined with healthy granulations. There is a bridge of healthy gum separating the orifice external to the alveolar process and the perforation of the hard palate. There is now no discharge coming down into the mouth, and the sinus over the right lacrymal bone is healthy. It is considered wise to keep the patient on a modified course of pot. iodid. and mercurial inunction.

The case is interesting in that it clearly proves that we have, apart from the already accepted specifics comprising mercury, pot. iodid., salvarsan, neosalvarsan, and now kharsivan, neokharsivan, and the French arsenobenzol, "yet another valuable string to our bow." In this case we have not the least doubt that but for the employment of hectine this patient's chance of ever becoming an efficient soldier, or, in fact, of ever recovering—his decline in weight and general condition being so rapid—was very poor. It was a matter of daily anxiety as to how much further the processes would go without involving the meninges. This is undoubtedly unique in our experience in the most severe cases of syphilis treated at this hospital, in that no improvement resulted when subjected to the above described intensified combination of accepted specifics. Regarding the patient's future service in the army, he is merely waiting now for the general structures of the buccal cavity to have settled down sufficiently to warrant the fitting of a dental obturator.

Encouraged by the above, we have used hectine in other cases, and hope to publish more notes on the subject before long, and discuss its relative value with the results we are obtaining with kharsivan and neokharsivan, which drugs we are now giving an exhaustive trial in approximately 100 cases.

The following formula gives the composition of hectine :—

Sodii Benzo-Sulpho-*p*-Aminophenyl arsonas.

$$C_6H_3SO_2NH\ C_6H_4As \begin{cases} OH \\ =O \\ ONa \end{cases}$$

Hectine consists of colourless needles, very soluble in water, containing approximately 21 per cent. of arsenic. The preparation used is put up in sterile ampules containing 20 cg. in 1 c.c.

Hitherto we have employed hectine purely locally —e.g., into the neighbourhood of a chancre, gumma, &c.—with good results clinically.

CENTENARIANS.—Mrs. Mary Shelton, of Rowcroft, Stroud, Gloucestershire, celebrated the 103rd anniversary of her birthday on May 29th.—Mrs. Jane Taylor, who was over 100 years of age, has recently died at Burlescombe, Devon.

DEATH OF MR. FRIEND EDWARD STREETEN.—Mr. Streeten, L.R.C.P. Edin., M.R.C.S., D.P.H., died recently at Swindon, in his sixty-third year. He received his medical education at St. George's Hospital, and in the "eighties" began practice at Swindon. After some years he gave up his private work and devoted his whole time to his various appointments. He was medical officer of health for the borough of Swindon and for the Highworth rural district, and was also medical superintendent of the Swindon and District Isolation Hospital, and school medical officer for the Swindon education committee. He was one of the best-known men in Swindon, taking an interest in all local matters, and was held in great esteem there. He was an energetic Freemason, and at the time of his death was Acting Provincial Grand Secretary. He leave a widow and two daughters.

VACCINES IN THE TREATMENT OF RESPIRATORY DISEASES.[1]

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WITHIN the past few years vaccines have been gradually coming into more frequent use in the treatment of diseases of the respiratory tract. Our knowledge as to their applicability and its limits is still to a great extent tentative, and it is only by the accumulation and comparison of the experience of different observers that we can hope to advance our knowledge. I do not, in the present paper, intend to concern myself with diseases due to tuberculous infection.

In the early days of vaccine treatment it was thought that its scope was limited to localised diseases, and in particular to those of chronic course. We know now that neither the degree of acuteness nor the lack of localisation is a bar to successful treatment, and some of the most marked successes have been in the case of acute generalised diseases. The main difficulty of vaccine treatment is one of diagnosis—of bacteriological diagnosis, and this difficulty is specially great in the case of diseases of the respiratory tract. No clinical entity among the diseases of the respiratory organs —not even pneumonia—can be stated with confidence to be due to a constant bacterial cause. Pneumonia, though most commonly due to the pneumococcus, may be due to any one of half a dozen organisms. A similar statement would be true of the infective diseases of the rest of the respiratory tract. We cannot, therefore, foretell from clinical grounds what organism we have to deal with in any particular case.

But this is only the beginning of our difficulties. The respiratory tract is part of the surface of the body, and it is open to constant bacterial soiling. In the upper part of the tract the mucous membrane is the normal habitat of a great number and variety of organisms, many of which are potentially pathogenic. In case of chronic infection the number of organisms may be indefinitely increased, and two or more of them may be simultaneously pathogenic. Our problem is, therefore, not merely to discover the organisms present, but to select from among them that which is most likely to be causative, bearing in mind that more than one may be causative at the same time. With our present degree of knowledge of the bacteriology of the respiratory tract it is not easy to solve the problem. Indeed, in not a few cases the diagnosis is only settled by the result of treatment. This, however, is not peculiar to vaccine treatment.

This difficulty of diagnosis might not, it is true, be a great hindrance if we were merely engaged in studying a scientific problem, where we had ample time and material at our disposal. It is very real, however, in the conditions of practice, whether in hospital or in private. It is not easy to subject a patient to several series of inoculations with different organisms, (*b*) being employed when (*a*) has proved useless, and (*c*) in its turn replacing (*b*). It is by an increasing knowledge of the relations of the several organisms which inhabit the respiratory tract to definite diseased conditions that vaccine treatment will be rendered at once more

[1] A paper read before the Section of Medicine, Royal Academy of Medicine in Ireland, on May 21st, 1915.

widely applicable and more efficacious in these diseases. When we are able to make as certain a bacteriological diagnosis of the cause of an infective lesion of the nose, throat, or bronchi as we are of the cause of a boil, vaccine treatment of respiratory diseases will be simple. In the meantime we have high authority for believing that "probability is the very guide of life," and the same authority advises us, in matters of practice, to consider ourselves under an absolute and formal obligation, in point of prudence and of interest, to act upon a presumption or low probability, though it be so low as to leave the mind in very great doubt which is the truth.[2]

Where no such presumption or probability can be found the question arises whether it is better to treat with one organism only or with a combined vaccine. The former is the more scientific method, and is the line I usually prefer. If, however, treatment produces no effect in a reasonable time, then the presumption in favour of the selected organism diminishes and may disappear, and another must take its place. In the conditions of practice, however, one cannot always choose the most scientific method, and in many cases one must from the start use a mixed vaccine, or, as I prefer, combined treatment by two or more vaccines. But the difficulties of administration are thereby greatly increased.

In vaccine treatment two points are essential: (1) proper dosage; and (2) suitable periods. It is not always easy to form a just judgment on these points, even with a simple vaccine, and when two or more vaccines are employed simultaneously the difficulties are greatly increased. It is impossible to analyse the effect and to assign to each vaccine its proper share. Where the infection is truly mixed the negative phase of one organism may interfere with the positive phase of another, and the results are inextricably entangled. When, however, it is necessary to treat with more than one organism it is better to keep the vaccines separate than to use a mixed vaccine. By doing so one can keep a certain control of the respective doses, and one can at any rate give the vaccines at approximately suitable intervals.

Something can be done to simplify the problem of diagnosis by care in the collection and examination of material. As the seat of disease may be either the nose, the naso-pharynx, the larynx, trachea, and bronchi, or the lungs, our methods of collection will naturally vary. If the material is to be collected from the nose the orifices of the nostrils should be well washed with soap and hot water, and swabbed with a pledget of wool moistened with alcohol. The patient, closing one nostril, should then blow his nose forcibly into a wide-mouthed sterile bottle; the process should then be repeated with the other nostril. If the bacteriological examination can be made without delay a sterile wipe or handkerchief may be substituted for the bottle, but the danger of contamination from the skin is greater.

In the case of the naso-pharynx, throat, or bronchi attention must first be paid to the cleansing of the mouth. It should be well rinsed with hot sterile water and the teeth thoroughly brushed. The patient is then directed to hawk or cough, as the case may be, and to spit into a sterile flask. In the case of the naso-pharynx, if secretion be plentiful, a culture may readily be obtained direct from the throat by the help of a platinum loop or a sterile swab. When the patient is entrusted with the collection of the specimen himself he should be directed to collect it first thing in the morning. In every case enough material must be obtained to permit of direct examination of smears as well as of cultural investigation.

Sputum, from whatever source and whatever may be the methods employed in collecting it, should, before cultures are made, be cleansed by washing in clean water. A convenient method, devised, I think, by Dr. W. E. M. Armstrong, is to put the sputum in a gauze strainer, such as is used on the tea-table, and hang it for some time under a slow-flowing tap. This superficial washing will almost certainly wash off any organisms which merely adhere to the sputum, while it will leave behind those which have accompanied it from its source.

The next step is the examination of direct smears, and from the study of these smears more than from the cultures one forms opinions as to the relative importance of the organisms present. A preponderating number of one organism is important, but weight must also be given to the known causative power of each. The presence of an organism not known to be normally present in the region under investigation must receive special attention.

Cultures are next made. I rely almost entirely on agar and blood-agar plates and on broth tubes. The blood-agar is of particular use in the isolation of the streptococcus and the pneumococcus.

I next proceed to discuss the results obtained in treatment of various conditions. I only purpose dealing with cases in which the treatment was given to such a degree as to permit of some judgment being formed as to its effects. I exclude, therefore, a number of cases in which its use was desultory or haphazard, as also a number in whose treatment I have only had a consultative or advisory duty. Some, however, are included in which, though a trial was given, it was hardly sufficient to come to a final judgment. The series finds itself reduced by these weedings to 14 cases. They were as follows: Chronic naso-pharyngeal catarrh, 4; recurrent acute naso-pharyngeal catarrh, 4; recurrent acute general catarrh with bronchitis, 3; chronic bronchitis, 2; and pulmonary abscess, 1. The 4 cases of chronic naso-pharyngeal catarrh were of long standing, and all the patients had undergone local surgical treatment of various kinds. The infections were: in 1 case pneumococcus, in 1 pneumococcus and micrococcus catarrhalis, in 1 streptococcus, and in 1 staphylococcus aureus and streptococcus. The dosage employed was pneumococcus, 10–60,000,000; micrococcus catarrhalis, 50–200,000,000; streptococcus, 10–25,000,000; and staphylococcus aureus, 50–500,000,000. The number of injections varied from 6 to 18. The results in three of the cases were entirely satisfactory; in the fourth the treatment had no effect. In Case 1, that treated by the pneumococcus alone, the condition had been very severe and protracted. The patient was unable to breathe through his nose, and at night the catarrh was so severe that he could not sleep more than a few minutes at a time. He used a dozen handkerchiefs in the day. Progress was steady, and after ten injections all his symptoms had disappeared. In Case 2, treated by streptococcus, relief was obtained at once, and only six injections were required. It is possible that this patient will need

[2] Bishop Butler: The Analogy of Religion, Introduction.

a further course. In Case 4, in which staphylococcus aureus was found, the treatment failed. This was a surprise to me, as the presence of a definite pathogenic organism such as staphylococcus aureus in the pharynx and nose offered good hope of cure; a further course with the streptococcus, which was also present, gave no result.

Four cases of acute recurrent nasal catarrh were treated. In 2 the infection was of micrococcus catarrhalis, in 1 of streptococcus, and in 1 of staphylococcus aureus. In Case 5 the nasal catarrh recurred nearly every evening, and was, I believe, dependent on pyorrhœa, for which condition the patient was sent to me for treatment. The vaccine was made from the pus of the gums, and it was only after a few injections had been given that I learned of the catarrh by the patient asking me whether the injections could have cured the condition, from which he unexpectedly found himself free. He had one or two relapses, but on the cure of the pyorrhœa the catarrh disappeared. In treating nasopharyngeal conditions it is always necessary to search for pyorrhœa and to insist on adequate local treatment. Case 6 was that of a barrister very active in political work, who had frequently to speak in the open air, with the constant result that a violent attack of catarrh came on, and he spent a sleepless night. The condition had persisted for nine months. In all he got 11 injections, varying from 50–150,000,000 micrococcus catarrhalis. He became perfectly well, and has remained so for three years. Case 7 (streptococcus) was that of a colleague who suffered much from sudden severe attacks of catarrh lasting a day or two, and recurring every few weeks. He did not permit me to carry out the treatment systematically, because after two injections of 10,000,000 he remained free from trouble for three months. One or two slight recurrences were easily relieved by further injections. Case 8, of staphylococcus aureus, was one of so-called "hay fever" occurring in a naval officer. He suffered from it every dusty day in summer whether in town or country. He never had it in winter or at any time afloat. He received four injections in July, 1913, and remained entirely free from catarrh, though ashore, for the rest of the summer. In 1914 he had a relapse, but I do not know the result of the treatment which was then resumed.

Of the 3 cases of acute recurrent general catarrh, 2 were infections of micrococcus catarrhalis and 1 of a staphylococcus. In Case 9, of micrococcus catarrhalis infection, the patient received eight injections, varying from 7–20,000,000, with the view of giving an immunity against future attacks. The course was given during the winter months, and the patient had no attack after the first injection. She had, however, a recurrence the following winter, and no permanent good resulted. I think that the doses given were too small. In Cases 10 and 11 the patients were "always catching cold," as they put it. Short courses of four injections of a staphylococcus and two of micrococcus catarrhalis respectively have given them satisfactory protection for the past nine months.

I have only treated two cases of chronic bronchitis, one with micrococcus catarrhalis and one with streptococcus. I do not think that either case was benefited to any appreciable extent, but in neither case was a sufficient trial given. One of these patients has just asked me to treat him again by the same method.

The last case in the series was one of abscess of the lung. A young woman, aged 26 years, after the operation of removal of the tonsils and of adenoids in the end of June last, developed signs of inflammation in the lower lobe of the right lung. She was put under the care of Dr. T. G. Moorhead, and subsequently, during his absence from Dublin, of my colleague Dr. F. X. Callaghan. The inflammation pursued a varying course for some four weeks; consolidation occurred, followed by abscess formation. The diagnosis was confirmed by the help of the X rays. The expectorated pus was examined, streptococcus and a staphylococcus being found. Vaccines were prepared, and doses of 5–10,000,000 of the one, and 25–50,000,000 of the other given at two-day and four-day intervals. A few doses of antistreptococcus serum were also given. The only other active treatment was the use, on Dr. Moorhead's advice, of an inhalant containing formalin, chloroform, menthol, and pine oil. This undoubtedly helped to empty the cavity and thereby to diminish toxæmia. For three weeks (up to August 28th) there was no improvement and the cavity extended, becoming easily mapped out by percussion on the anterior chest wall. The propriety of operation was discussed from day to day, when improvement began and (on Sept. 4th) the temperature settled to normal. For a long time the cavity was very obvious by percussion and auscultation, "cracked-pot sound" being very marked, and cough persisted throughout the winter, but otherwise the patient's health was good. I had the opportunity of examining her again a few weeks ago. The cavity is much shrunken; it cannot be detected by percussion, though cavernous breathing is heard; there is apparently a fair amount of fibrosis round the cavity; there is still some cough, but the expectoration is not foul. The patient's general health is excellent. I cannot attempt to assign to each part of the treatment its proper share of credit, but the prospect at one time seemed hopeless or nearly so, and the result has been very satisfactory.

I have not included in my series any cases of any form of pneumonia other than that just related, since in no other have I applied the treatment systematically. It appears to be of little use to employ vaccines in the treatment of pneumonia unless the case comes under observation very early, an event which rarely happens.

Taking my series as related, in 10 of the 14 cases treated the result was very satisfactory; in 1 there was a temporary improvement, and in 3 no result could be traced. In 2 of these latter I am not satisfied that the trial was adequate. Classifying the cases treated according to infection the results are as follows: micrococcus catarrhalis 5, of which 3 became quite well, 1 was benefited and 1 unaffected; pneumococcus 2, both became well; staphylococcus 1, became well; streptococcus 3, of whom 2 became well, and 1 was unaffected; streptococcus and staphylococcus 2, both became well; staphylococcus aureus 1, became well.

When one remembers that many of these conditions had already proved their obstinacy, and that ordinary methods of treatment of chronic respiratory diseases are of very little avail, I think it may be claimed that the results of vaccine treatment are distinctly encouraging.

Dublin.

X RAY LOCALISATION AND THE REMOVAL OF FOREIGN BODIES ON THE X RAY TABLE.

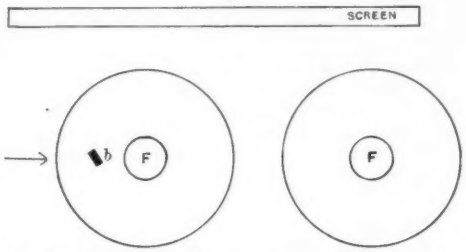
BY JOHN R. CALDWELL, M.B., CH.B. ST. AND.,
LIEUTENANT, ROYAL ARMY MEDICAL CORPS (SPECIAL RESERVE).

IN these days one rarely glances through a journal of surgery without finding a description of some "new" method of localising foreign bodies. These are nearly all modifications of the classical method of Mackenzie Davidson, and the principle underlying them all is the same. The majority have as their object the determination in inches or centimetres of the depth of a foreign body in the tissues. The radiographer thinks he has done his duty when he has stated that below a certain mark on the skin at a certain depth will be found the foreign body in question. There is at present a tendency to overestimate the value of such information. The almost unattainable ideal is an anatomical localisation. Stereoscopy aims at such, but unfortunately the same picture is differently interpreted by different observers, and there are numerous inexplicable fallacies in the method. I repeat that the value of X ray localisation in units has been overestimated, and that to be really useful the information provided by the radiographer should be in units; yes, but should also give an idea of the relations to neighbouring structures. It has been suggested[1] that an atlas of transverse frozen sections of the human trunk and limbs might provide useful information upon which to use the data of "stereometry," but as the tissues vary so much in thickness and as there are so many sources of error the value of such would be very doubtful. To this there is the exception of the eyeball, which varies in dimensions within limits so narrow that the cross-thread localiser of Mackenzie Davidson has been of untold value.

Some time ago I had on the X ray table a patient, paraplegic, in whom a bullet was found in the lumbar region 1 centimetre to the left of the spinous process of the fourth lumbar vertebra. The wound of entrance was slightly to the left of the second lumbar spine, and there were indications of fracturing of the lamina of that vertebra. Localisation by a simple method revealed the fact that the bullet lay at a depth of 4½ centimetres, and the question to be decided was whether the bullet lay in the canal or dorsal to the lamina. Clinically the paraplegia suggested the former, but, of course, it was conceivable that the bullet having fractured the lamina of the second lumbar vertebra had glanced down and lay separated from the canal by the thin plate of bone. It will be at once understood that a variation in the thickness of the tissues overlying the spinous process, or in the length of that process by about half a centimetre (i.e., the thickness of a lamina), made all the difference as to whether the bullet lay in or out of the canal. Obviously the data supplied were little if any help.

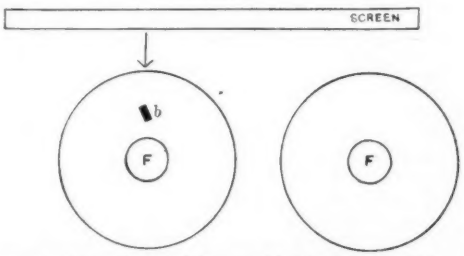
Where is the radiographer who has not, without over-fatiguing his mental faculties, thought out for himself a method of localising foreign bodies, but of what real value is a very exact measurement? When the surgeon has discovered the bullet it may be found that the radiographer was correct to within a few millimetres, yet before the commencement of the extraction the information given could at the most give a very imperfect idea of the whereabouts of the offender. Thus it is that the surgeon has called to his aid the "telephone probe," and some enthusiasts have gone so far as to say that in the near future no surgeon will attempt the removal of a foreign body without its aid. A probe, whether telephone or otherwise, is a bad instrument at least in recent or septic cases, and in a war hospital it may safely be dispensed with. Operating surgeons will be only too ready to agree that localisation still leaves much to be desired, and for reasons some of which have been given above.

FIG. 1.



This figure illustrates sections, say, of the right and left thighs with a bullet (*b*) to the outer side of one. The arrow indicates the position of the incision and the plane of the forceps parallel to the screen. F, Femur.

FIG. 2.



Illustrating sections as before, and showing a foreign body (*b*) in front of the femur (F). The arrow indicates the position of the incision.

The method of removing foreign bodies on the X ray table while not overcoming these ills holds so many advantages that it becomes impossible for an experienced operator to fail in the removal of one in an accessible situation. The advantages of being able to see the object of the search whenever you please are enormous, and this, combined with the intelligent appreciation of the principles of radioscopic localisation as described in my last two communications on this subject,[2] makes a tremendous difference on the speed of an extraction and the certainty of success.

But it must not be supposed (as happens here frequently among those watching an operation) that it is as easy as it looks, and here I may be permitted to mention how difficulties arise in this method of working. In the first place, it is not possible on the X ray table to put your patient into all the positions permissible on the ordinary table for the reason that the screen must always be considered. In operating on the upper part of the thigh the patient must be either on his back or his

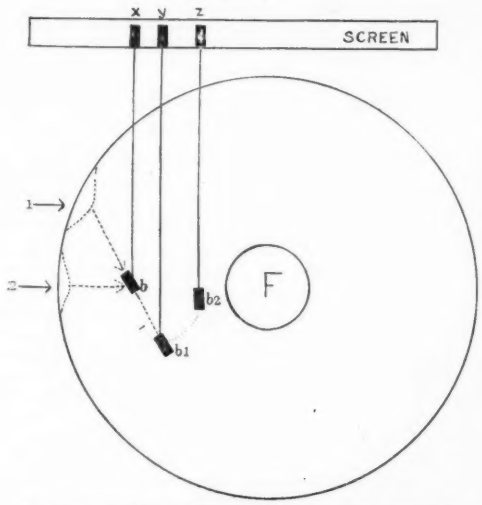
[1] Some Principles of X Ray Localisation, W. Cotton, M.D., Practitioner, April, 1915.

[2] The X Ray Theatre in War Hospitals, THE LANCET, April 24th, 1915, p. 854; Report on a Few Cases illustrating the Removal of Foreign Bodies on the X Ray Table, THE LANCET, May 15th, 1915, p. 1018.

face in order that the opposite hip may not interfere with the screen. Likewise, in an operation on the side of the chest or axilla, you must choose the diameter which gives the best view, and, again, the position must be dorsal or ventral. Here arises the difficulty. If a bullet, for example, be situated on the outer aspect of the upper end of the thigh the forceps must approach it in a plane parallel to the plane of the screen. (See Fig. 1.) Where it is possible to make the incision over the apparent position of foreign body on the skin the operation is a matter of seconds, as it is practically impossible with the foreign body carefully "centred" to miss it. (See Fig. 2.)

How, then, are we to find the most suitable site for the incision in cases such as are diagramatically represented in Fig. 1? The method which I adopt

FIG. 3.

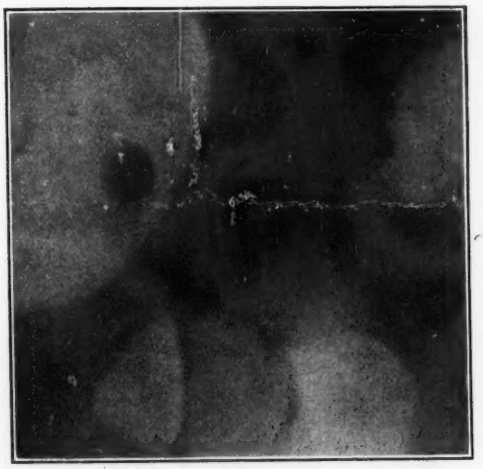


The figure represents section of the thigh; F, femur. Impulses delivered *vid* the tissues to the foreign body at positions 1 and 2 may cause an equal amount of actual movement thereof. The apparent movement on the screen is, however, much less in 1 than in 2. The sudden accession of movement seen on reaching the correct lateral plane is thus explained. (For purposes of simplicity the rays are represented as being parallel.)
b, Foreign body in resting position. b_1, Foreign body after impulse at 1. b_2, Foreign body after impulse at 2. Screen: x–y = Apparent distance travelled by *b* on delivery of impulse at 1. x–z = Apparent distance travelled by *b* on delivery of impulse at 2.

might be described as that of "transmitted impulse": the part concerned is systematically "prodded" with either the finger or forceps under the rays, and the movements of the foreign body are studied. For this purpose I use the business end of a pair of "Spencer Wells" forceps. Working systematically from above downwards in a plane parallel to that of the screen, impulses are conveyed *vid* the soft parts to the foreign body, and when the point of maximum movement or excursion of this is attained the corresponding position on the skin is noted. Here, if possible, the incision should be made, but if this is not convenient the near vicinity should be selected. The sudden increase in the excursion of the foreign body noted on reaching the correct lateral plane is diagrammatically explained in Fig. 3. This method, though apparently unscientific, is astonishingly accurate. A little experience will indicate the cases to which it is applicable, but briefly these are the upper part of the thigh, the side of the chest wall, the axilla, the scalp, and the face. Small foreign bodies in the scalp and face can be well located in this way. The head under the screen is slowly rotated, so that merely the thickness of the tissues overlying the bone can be inspected. When the foreign body is seen it can be located by the method just described. Here it is now a rule to remove all fragments, however minute (within reason). Many might be well left alone, but occasionally as a result unpleasant things happen. A considerable time ago I had a patient in whom the side of the face was "peppered" with minute pieces of shell. These were thought to be so trifling that it was decided merely to apply fomentations. Intense œdema of the eyelids and conjunctiva supervened, which only ceased with the removal of a minute foreign body which had slightly splintered the external angular process of the frontal bone.

The method of removing foreign bodies on the X ray table is thus not a substitute for localisation but a combination of localisation and extraction. In difficult situations I still employ stereograms as accessories, but detailed measurements are never made. Foreign bodies in the near neighbourhood of bones are easily removed because their position with regard to fixed landmarks is easily and accurately given. In this method, as will be understood from my earlier communications, the forceps point constitutes a fixed point of known position, and the study of its movements relative to those of the foreign body constitutes the secret of the speed and success of the method.

FIG. 4.



Showing foreign body in the neighbourhood of the ischial spine.

Two cases upon whom I operated recently are of sufficient interest, I think, to justify description. They exemplify in a striking manner all that has been claimed for this method. Both showed old and healed wounds, and it is always a matter of the greatest difficulty in these to decide if their complaints are real, imaginary, or assumed. In any case the quickest way usually to get them back to the firing line is, if possible, to remove the source of the trouble.

CASE 1.—A Belgian private in the 2nd Carabiniers was wounded by a shrapnel ball at Werchter, near Louvain, on Sept. 12th, 1914. He was sent to the military hospital at

Antwerp, then to hospitals at Ostend, Portsmouth, and Bournemouth. When at Bournemouth he had an operation lasting three hours without success. There he was kept for four and a half months and then returned to his depôt in France, after which he was sent to us to have the ball removed.

Upon admission he was somewhat lame and complained of pain on walking and inability completely to extend his thigh. Examination revealed the cicatrised wound of entrance on the left buttock 1 inch to the left of the middle line and 2 inches behind the rectum. There was an old operation scar on the buttock some 4 inches long. On being put on the radioscopic table he sarcastically remarked that this was the eighth time and would probably be as fruitful in results as the others. The radiogram revealed a ball in the neighbourhood of the ischial spine. (Fig. 4.)

At the operation under spinal anæsthesia an incision 2 inches long was made alongside the old one and the fibres of the gluteus maximus were exposed. Under the rays a pair of long closed forceps were pushed down and the ball grasped and extracted. The operation lasted 14 minutes. At the moment of writing (the fifth day) the patient is walking in the garden of the hospital.

CASE 2.—A private in the Grenadiers, wounded on the same day and at the same place as the preceding patient, was treated at hospitals in Antwerp, Ypres, Havre, and Tours. Radiographic examinations were made on seven different occasions, but no operation was attempted.

On admission here the patient was somewhat lame and complained of pain in the lower part of the thigh. Upon examination the cicatrised wound of entrance was found on the outer side of the thigh at its middle. The radiogram (Fig. 5) revealed a flattened-out shrapnel ball embedded in the hamstring muscles and a second one lying in the medullary cavity of the femur. The opening in the bone made by the ball in its passage is seen some 4 centimetres above the ball.

FIG. 5.

Showing (1) a flattened-out shrapnel ball embedded in the hamstring muscles; and (2) one lying in the medullary cavity of the femur.

At the operation the femur was exposed by an incision on the antero-external aspect of the thigh. The opening in the femur was readily found, but it was impossible to approach the ball by that route. Guided therefore by the rays a ¾-inch trephine was placed on the bone immediately over the foreign body and a circle of bone removed. The ball was extracted with a pair of sinus forceps through an opening which just accommodated it. The flattened-out ball lying among the hamstring muscles was removed *viâ* a short posterior incision. Up to the present (the fifth day) the patient's progress has been satisfactory in every respect.

The outstanding feature of the method is surely its simplicity. As a rule, the radiographer knows little about surgery and the surgeon less about radiography, but the profound knowledge of this is not an essential to the successful performance of projectile extraction.

In conclusion, it is gratifying to know that the method is attracting the attention it deserves. Those competent to pass an opinion who have seen foreign bodies extracted here have nothing but praise for a method so speedy and so successful. Adverse criticism comes only from those who have neither seen nor practised, and who are thus scarcely competent to judge.

Hôpital Sophie Berthelot, Calais.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A NOTE ON A MODIFIED FORM OF COLPO-PERINEORRHAPHY.

BY JAMES OLIVER, M.D. EDIN., F.R.S.E.

A PATIENT, aged 42, came under my care recently complaining of protrusion of the womb from the front passage and of the lower bowel. The protrusion of the womb had been in existence for nearly 20 years, and when I saw her the replacement of the uterus and vaginal walls was effected with some difficulty. The vaginal orifice was naturally very much relaxed. I performed on her a modified colpo-perineorrhaphy, and when the wound was quite healed the patient had a ring pessary placed, and thereafter neither the uterus nor the bowel caused her any inconvenience, and she was able to walk about in perfect comfort.

To most patients the retention of the prolapsed uterus and vaginal walls by means of a Zwanke pessary, or a pessary which has to be supported by a band encircling the abdomen, is irksome and inconvenient, and an operation which enables them to wear a watch-spring ring pessary with greater success and comfort is a decided boon. The modified colpo-perineorrhaphy, which I have found useful under such circumstances, consists in splitting the recto-vaginal septum close to the posterior margin of the vagina by means of perineal sharp-pointed scissors. The point of the dependent blade of the scissors is inserted close to the extreme left margin of the vaginal orifice and carried transversely under the skin to the extreme right margin. The same point of the scissors is then inserted under the skin at the extreme left margin of this transverse incision and carried upwards and slightly outwards for an inch or more, dividing the skin at the same time. A similar severance of the skin is effected on the right side, and an anterior or vaginal flap is thereupon dissected up to an extent varying with the requirements of each individual case, the left and right corners of this flap being held forward at the time by two pairs of pressure forceps. This flap is then divided centrally and vertically down to the rectum by the scissors. From the inner side of each of these vertically divided flaps a triangular piece is removed by snipping with scissors from the centre of the rectum upwards and outwards to the anterior limit of the two vertical and lateral incisions.

With a knife an incision skin-deep is then made posteriorly from the left margin of the original transverse incision to a spot close to and about the middle of the anterior portion of the sphincter ani muscle. A similar skin-deep incision is made on the right side and the V-shaped piece of skin thus outlined is dissected off. The raw surfaces thus created are then stitched in three layers, and as the greater portion of the sutures are buried I prefer to use 40-day No. 1 and No. 3 Van Horn catgut for stitching up. A curved needle carrying a short length of No. 1 catgut is inserted at the anterior limit of the incision on the left side avoiding inclusion of the skin and the mucous membrane, and the same armed needle is carried and made to traverse in a similar manner the anterior limit of the incision on the right side. This suture is then tied and left long, and held forward by a pair of pressure forceps. This act brings the raw mucous membrane edges of the vaginal flaps together centrally, and without transfixing the vaginal surface of these flaps the central cleft is closed by a continuous No. 1 catgut suture, beginning at the rectum and extending forward. By means of a continuous buried suture of No. 3 catgut, beginning posteriorly close to the sphincter ani and extending forward, the deep portion of the wound is now brought together, and thereafter the skin—beginning posteriorly—and the entire wound closed by a continuous No. 1 catgut suture, and just before tying this suture the catgut suture originally inserted at the anterior limit of the wound is cut short.

In some cases the need for a ring pessary is obviated by combining amputation of the cervix uteri with the aforesaid operation.

Harley-street, W.

A CASE OF PAROXYSMAL HÆMOGLOBINURIA.

BY HAROLD E. THORN, M.R.C.S., L.R.C.P.LOND.,
SURGEON, R.N.

A. B., aged 18, in H.M.S. *Britannia*, came under observation on March 22nd complaining that seven days previously his urine had suddenly become very dark in colour. This lasted for three days and was succeeded by an interval in which he passed urine of normal colour. The same deep tint, however, returned, and he noticed it for two days previously to reporting himself. Whilst each of these attacks lasted there was pain in the lumbar region on both sides. On the evening of March 22nd the temperature was 99° F., but on every other day when under observation it was normal.

On examination the patient appeared very healthy. The urine was found to be dark in colour with a dirty deposit, which did not show any definite formation under the microscope. No blood cells could be seen. The reaction was acid and the specific gravity 1032. There was a large amount of albumin present, but no albuminometer was available for its definite estimation. The guaiacum blood test was strongly positive.

The patient was put to bed and the next day he had some lumbar pain, but the temperature was normal. The urine was just pink and there was only a trace of albumin. The reaction was still acid; specific gravity 1033. Two white blood corpuscles, but no red cells, were found in the deposit. Tubercle bacilli were not found. The back did not show any abnormal physical signs. The heart and lungs were normal. The systolic blood pressure was 120 mm. of mercury. The fundus oculi was also normal. Poikilocytosis was found and diminished rouleau formation in a blood film. There was no œdema of the limbs or back. On March 24th the urine had returned to normal and the patient was allowed to get up. Until that day he had been on light diet, but he was then allowed ordinary food, with the exception of rhubarb. Two days later (March 26th) the lumbar pain had disappeared. He was sent back to duty. Since then he has had two similar attacks, but was not seen by a medical officer owing to the fact that he went on leave for two weeks. He says that the third attack started on April 1st after a long walk, and that the fourth attack followed similar exercise within the next fortnight. He has now been quite well for eight weeks.

The patient is fond of taking cold baths, but these have been forbidden him. The attacks of paroxysmal hæmoglobinuria seem to follow exercise in every case, but a definite cause cannot be found. The remarkable thing about the case is the large amount of albumin which was present in the urine on the first day on which the patient came under observation and the rapidity with which it disappeared.

H.M.S. *Britannia*.

Medical Societies.

ROENTGEN SOCIETY.

X Ray Localisation Methods.—Discussion on Methods of Protection of X Ray Operators.

THE annual general meeting of this society was held on June 1st at the Cancer Hospital, Fulham-road, Sir ALFRED PEARCE GOULD being in the chair.

Captain J. H. SHAXBY, R.A.M.C. (T.), read a paper on X Ray Localisation Methods. He described two methods which had proved very serviceable in determining the position of foreign bodies, the first in certain special cases, the second for general work. It was sometimes impossible, he said, from a determination of the depth alone of a foreign body, to decide whether it lay above or below a broad flat bone such as the scapula. The remedy was to take two photographs from widely different angles of view, and the present method aimed at securing this in the two plates of the localisation. Briefly, it differed from the usual methods in two respects: (1) the anticathode, instead of being more or less in the vertical line through the foreign body, was placed markedly to one side, so that the views were both oblique; and (2) the displacement of the bulb between the two exposures was in a line perpendicular to the photographic plate, instead of parallel to it. As a result there was a considerably greater displacement of the shadow of the foreign body relatively to the adjacent bone than was given by the ordinary process. A simple formula, involving the distances of the two shadows from the point on the plates vertically over the focus spot, gave the position of the foreign body, or a thread method similar to Sir J. Mackenzie Davidson's might be employed. The second photographic plate might be raised equally with the bulb, keeping the distances of the plates apart fixed, or it might be placed in the same position as the first plate. The point alluded to, exactly above the focus spot, was determined by a fuse-wire grid in a fixed position over the anticathode; superposition of the plates and examination of the unequal-sized shadows of the wires made it possible accurately to find the required point. With apparatus which permitted of ready raising and lowering of the bulb the method was quick and simple, and the displacement of shadows large and correspondingly easy to measure accurately. For ordinary cases the usual procedure of moving the bulb parallel to the plate was followed, but the addition of a small auxiliary apparatus did away with the need for measuring the distance the bulb moved and also the distance from its focus spot

to the negative. The appliance consisted of a small frame set up perpendicularly to the photographic plate and made of material transparent to X rays; this supported a series of parallel lead wires, arranged very much like the laths of a "Venetian" blind let down a little crookedly (Messrs. Newton and Wright, Wigmore-street, were the makers). The apparatus was mounted so that it could be easily clipped on to a plate envelope or casette, one end of the first wire being as close as possible to the plate. The slope of the wires was such that the other end of this wire was 1 cm. from the plate holder; the second wire, parallel to the first, lay 1 cm. from the plate at one end and therefore 2 cm. from it at the other. The distance of the third wire ranged in the same way from 2 to 3 cm., and so on for any convenient number of wires. The negative after the two exposures of the localisation showed two shadows of the foreign body and also two shadows of the lead wires. With a pair of divider compasses the displacement of the bullet shadows was set off, and the compasses were then moved to the wire shadows. If it was found, for instance, that a point a quarter of the way along one shadow of the fourth wire was at the set-off distance from the other shadow of the same point, then, very obviously, the bullet was at the same distance from the plate as this determined point on the wire system—a distance, that is, of 3·25 cm. The only care required in affixing the appliance to the plate was to put it so that the two shadows fell on opposite sides of its base, so that they did not overlap and give a confused pattern. For intensifying screen work or long exposures it was not advisable to expose the localiser throughout, or the density would become too great for convenient examination; the part of the plate where the wire shadows were to fall might be covered by a metal screen during the greater part of the process, the localiser being slipped into place only for the end of the first exposure and the beginning of the second.

Mr. SIDNEY RUSS, D.Sc., in opening a discussion on Methods of Protection of X ray Operators, drew attention to the special dangers attending X ray screen examinations. Efforts were made to protect the operator by enclosing the X ray bulb in a box covered with absorptive material, except in the path of the vertical rays used; the fluorescent screen over which the operator leant in order to interpret the image there presented was backed by lead glass to protect the face of the operator; gloves were also provided for use when manipulations of the patient had to be made while irradiation was going on. He directed attention to the extent to which the rays were cut off by the devices at present employed. He had recently made some measurements upon the percentage of radiation transmitted through various samples of protective material, which were at present being used in the army X ray installations. Considering first of all the bulb, it was usual for this to be enclosed in a wooden box lined within or covered by lead rubber or lead itself. There was no uniformity in the thickness or quality of lead rubber employed, with the result that the percentage of stray radiation was in some cases as low as 0·1 per cent., and in others as high as 5 per cent., of that of the primary beam of rays. With regard to the protective lead glass used in the fluorescent screens, the degree to which the rays were absorbed was found to depend very much upon the quality of the glass. A small increase in the amount of lead contained in the glass made a very large difference in its absorbing power, so that the quality of the glass in this respect was an important consideration. It was found by measurement that with the thickness of glass frequently in use at present as much as 4 per cent. of the energy of the beam reaching the fluorescent screen was received by the operator. What, then, were reasonable limits of safety in this respect? Dr. Russ thought it difficult for those engaged in X ray work to realise the enormous amount of radiation given out by modern bulbs; this was partly because the methods in use for the measurement of X rays were relatively gross methods. When an instrument such as an electroscope, which was a very delicate detector of X rays, was moved about in the neighbourhood of an X ray bulb which was accorded a reasonable amount of protection, it was astonishing to find what an amount of stray radiation there still was. It should be remembered that whenever this stray radiation was present the air became highly ionised, and upon this the ordinary methods of ventilation had no effect. It did not seem unreasonable to hope that in the not too distant future due attention would be paid to the atmosphere in which the radiologist conducted his examinations.

Dr. N. S. FINZI referred to the enormous output by the modern X ray bulb, not only of primary but also of secondary radiations. This was shown by an interesting experiment. If a tube were placed in a protective box that completely enclosed it except for the opening guarded by the diaphragm, very little secondary or other radiation was observable so long as the diaphragm was quite closed, but the moment the latter was opened, though only a very little, a strong secondary radiation could be detected anywhere in the immediate neighbourhood of the tube. This showed that while the usual protective box cut off nearly all the primary radiations there were the secondary rays to be considered which might be a great danger to the radiologist.

Mr. J. H. GARDINER, F.C.S., gave the results of experiments to determine the quality of the secondary radiations given off by various materials. Some surprising results were secured; for instance, paraffin wax gave off a more penetrating radiation than copper or silver. To him it seemed that any method of protection to be efficient must take account of the secondary radiations.

Dr. G. B. BATTEN considered this matter of X ray protection as one of the first importance at the present time when so many radiologists were working many hours every day in the military hospitals, and one of the greatest dangers was that in the absence of any definite rules it was more than likely that the protective measures in many of the X ray outfits supplied to the War Office fell short of what was desirable. He considered that a committee of the Roentgen Society should formulate a set of rules for X ray protection which would be a guide to makers and users of X ray apparatus.[1]

At the close of the meeting Dr. W. IRONSIDE BRUCE gave a demonstration of his method of accurately finding a foreign body in the tissues after it has been localised by the X rays. The apparatus was described in THE LANCET of Feb. 6th, 1915, p. 275.

LONDON DERMATOLOGICAL SOCIETY.—The annual general meeting of this society was held on June 15th at St. John's Hospital for Diseases of the Skin. Dr. W. Griffith, the President, presented the council's annual report. The balance sheet, which was presented by Dr. W. Knowsley Sibley, the honorary treasurer, was received and adopted. The following officers were elected for the ensuing year:—President: Dr. J. L. Bunch. Vice-Presidents: Dr. Morgan Dockrell and Dr. W. Griffith. Honorary treasurer: Dr. W. Knowsley Sibley. Honorary secretary: Dr. Simonds Gooding. Council: Dr. M. K. Hargreaves, Dr. R. Prosser White (Wigan), Mr. A. T. Bremner (Leicester), Mr. C. R. Kempster, Mr. C. H. Mills, and Mr. E. G. Reeve.—At the clinical meeting which followed a series of interesting cases were exhibited. Dr. Morgan Dockrell showed a case of Pityriasis Rubra Pilaris, and demonstrated the histological sections.—Major E. G. Ffrench, R.A.M.C., read a paper entitled "The Substitutes for Salvarsan and Neosalvarsan." He said that according to a report in THE LANCET of April 10th, 1915, by the secretary of the National Medical Research Committee, the chemistry of kharsivan and neokharsivan was said to be identical with salvarsan and neosalvarsan, the details of their preparation being identical. He said that he did not propose to discuss the chemistry of the preparation of these products, but rather to confine himself to observations made and the clinical results obtained after their use. He also mentioned a third substitute—viz., novarsenobenzol "billon," which was a French preparation manufactured by Poulenc Frères. Billon, he said, was a darker yellow colour than neosalvarsan, a yellow powder somewhat darker than the 914, dissolving readily in water and forming a clear yellow solution. For use it was dissolved in 10 c.c. of freshly distilled water and injected intravenously immediately afterwards. Neosalvarsan formed a clear yellow solution and dissolved readily. He first saw this concentrated solution tried with success by Professor John Fordyce, of the City Hospital, New York, in 1913, and since then he had adopted the method. Neokharsivan was a reddish-brown powder and dissolved quickly, forming a reddish-brown solution. Kharsivan was a yellow powder which did not dissolve readily in water. He recommended

[1] This suggestion was adopted and the council of the Roentgen Society have undertaken to give effect to it.

the following procedure. The powder was poured on to three dozen glass beads in a large sterile glass flask, the latter being shaken to allow the powder to mix with the beads; 20 c.c. of saline made of freshly distilled water was then added and the flask shaken with a swirling motion for a few seconds; more saline was then added and the flask shaken for about half a minute; finally the remaining portion of the 100 c.c. of saline was added and the flask was shaken again but not too vigorously. A clear yellow solution was the result, and the time taken was about three minutes. The solution was then neutralised with a 4 per cent. solution of sodium hydrate, the quantity required to dissolve the 0·6 grm. being 4·8 c.c. After neutralising another 150 c.c. of saline was added, making the total amount 250 c.c. The strength of the salt solution used was 0·9 per cent.—that is, 8·5 grm. of sodium chloride to 1 litre of distilled water. It was injected at body temperature. With regard to neosalvarsan, neokharsivan, and billon, the same amount of water, 10 c.c., was used to dissolve a moderate or full dose, the solution being injected cold owing to the greater tendency to rapid oxidation. The method of injection was as follows. A 10 c.c. record syringe was used; the barrel was filled and the needle introduced into the vein, the piston being withdrawn slightly so as to see if the needle had entered the lumen of the vessel. If it had, the piston might be gradually pushed home. The skin over the vein was painted with a solution of iodine and chloroform, 1/15, before and after the operation, and a piece of sterile gauze was placed over the puncture and sealed with collodion. The day before injection all the organs and urine of the patient were examined, and pil. hydrarg., gr. 4, given in the evening and mist. alba, 1 oz., in the morning. At 7.30 A.M. breakfast, consisting of tea and bread-and-butter, was allowed, and the injection was given in the forenoon. If there were no immediate after-effects the patient was given tea and bread-and-butter at 4.30 P.M. Ordinary hospital dinner was allowed at 7.30 P.M. if the patient still remained free from temperature, vomiting, headaches, &c. He was kept in bed until the following morning. The routine method of dosage was to give three intravenous injections of salvarsan or neosalvarsan at intervals of ten days. The day after the first injection mercurial cream, grm. 1, was injected into the buttock and carried out for nine consecutive weeks. 0·6 grm. salvarsan or 0·9 grm. neosalvarsan was nearly always given as the first dose; 0·4 grm. salvarsan or 0·6 grm. neosalvarsan was given as a second dose unless the patient had only a moderate dose at first, when a full dose was given. A full dose was given for the third injection. The same procedure was being adopted with the substitutes kharsivan, neokharsivan, and novarsenobenzol. Major Ffrench said that over a hundred cases, comprising primary, secondary, and tertiary, had now been treated with the substitutes, and that they had come to the conclusion that kharsivan and neokharsivan were somewhat more toxic than salvarsan and neosalvarsan. He gave the following percentages of immediate after-effects produced. Of 136 injections of kharsivan 60 per cent. gave no reaction; 27 per cent. gave slight reaction, such as headache, slight temperature, vomiting, rigor, and diarrhœa; and 13 per cent. gave severe reaction of the symptoms mentioned. Of the 124 injections of salvarsan, 63 per cent. gave no reaction, 33 per cent. slight reaction, and only 4 per cent. severe. Of the salvarsan cases, 20 per cent. were primary, 75 per cent. secondary, and 5 per cent. tertiary. Of the 25 injections of neokharsivan, 32 per cent. gave no reaction, 40 per cent. slight reaction, and 28 per cent. severe; 20 per cent. were primary, 48 per cent. were secondary, and 32 per cent. were tertiary. Compared to neosalvarsan, of the 75 injections 72 per cent. gave no reaction, 21 per cent. slight, and only 7 per cent. severe. The primary were 40 per cent., secondary 26 per cent., and tertiary 34 per cent. Of novarsenobenzol, 42 injections were given; 76 per cent. gave no reaction, 19 per cent slight reaction, and 5 per cent. severe. There were 12·5 per cent. primary, 12·5 per cent. secondary, and 75 per cent. tertiary. The greatest number of severe reactions occurred in the secondary and late primary cases. He said that it was most satisfactory to state that they had not experienced any serious results in the use of these substitutes, and that they believed that kharsivan and neokharsivan were very excellent substitutes (for salvarsan and neosalvarsan), and that so far as their experience had gone they might be safely recommended for the treatment of all forms of syphilis.

Reviews and Notices of Books.

Heredity and Environment in the Development of Man.

By EDWIN GRANT CONKLIN, Professor of Biology in Princeton University. London: Humphrey Milford. 1915. Pp. 533. Price 8*s.* 6*d.* net.

THIS interesting volume on an ever-expanding subject is composed of the Norman Wait Harris Lectures for 1914, which were given at Northwestern University and subsequently repeated at Princeton University. The lectures were founded in 1906 through the generosity of N. W. Harris, of Chicago, and are to be given annually. Such diverse subjects as personalism, university administration, the age of mammals, democracy and poetry, the milk question, and the constitution of matter have already been dealt with by previous lecturers. The purpose of the lectures is "to stimulate scientific research of the highest type and to bring the results of such research before the students and friends of Northwestern University, and through them before the world. By the term 'scientific research' is meant scholarly investigation into any department of human thought or effort without limitation to research in the so-called natural sciences, but with a desire that such investigation should be extended to cover the whole field of human knowledge."

The text consists of six chapters or lectures, illustrated by nearly 100 figures. The subjects dealt with are: (1) Facts and Factors of Development; (2) Cellular Basis of Heredity and Development; (3) Phenomena of Inheritance; (4) Influence of Environment; (5) Control of Heredity, Eugenics; (6) Genetics and Ethics.

As a result of the doctrine of organic evolution it has become plain that man's place in nature has been clearly defined, and the resemblance between men and the lower animals has come to have a new significance. It is recognised that life processes are everywhere the same in principle, though varying greatly in detail, so that all the general laws which apply to animals and plants apply to man. It is on this foundation that the recent wonderful advances in experimental medicine have become possible.

If the origin of species was the greatest biological problem of the past century, assuredly the origin of individuals is the greatest biological subject of the present one. This is the author's theme. He deals first with the phenomena of development, including such trite subjects as the germ cells, fertilisation, cleavage, embryogeny, organogeny, oviparity and viviparity, and development of functions. He shows that every living being is a complex system in dynamic equilibrium and manifests the following features. It contains protoplasm, and its equilibrium is maintained by the physiological processes known as metabolism, reproduction, and irritability. The development of functions goes hand in hand with the development of structures; indeed, "function and structure are merely different aspects of one and the same thing—namely, organisation." As to the origin of the mind, or rather of the soul, "the only possible scientific position is that the mind (or soul) as well as the body develops from the germ..... The mind develops by gradual and natural processes from a simple condition which can scarcely be called mind at all."

Further, says the author, there is no more reason for supposing that the mind is supernaturally created than that the body is, the mind being related to the body as function is to structure. The development of the mind is treated under the following heads: (*a*) Sensitivity; (*b*) tropisms, reflexes, instincts; (*c*) memory; (*d*) intellect, reason; (*e*) will; (*f*) consciousness. The first lecture is brought to a close by a short chapter on factors of development, including an account of the doctrines of preformation and epigenesis. The author's teaching may be thus summarised: The intrinsic factors of development reside in the organisation of the germ cells; the extrinsic are represented in environmental forces and conditions; the intrinsic factors are commonly called heredity; they in the main direct and guide development, while the environmental factors furnish the conditions in which development takes place and modify, more or less, its course.

In discussing the cellular basis of heredity and development the author's position is that all the phenomena of life, including heredity and development, are cellular phenomena in that they include only the activities of cells or of cell aggregates. Heredity originally meant "heirship or transmission of property from parents to children." In the field of biology it has been defined erroneously, says the author, as "the transmission of qualities or characteristics, mental and physical, from parents to offspring." We are told roundly that no "qualities" or "characteristics" are "transmitted" as such from one generation to the next. The following is the author's definition and summary: "Heredity may be defined as the appearance in offspring of characters whose differential causes are found in the germ cells. Heritage is the sum of all those qualities which are determined or caused by this germinal organisation. Development is progressive and coördinated differentiation of this germinal organisation, by which it is transformed into the adult organisation. Differentiation is the formation and localisation of many different kinds of substances out of the germinal substance, of many different structures and functions out of the relatively simple structures and functions of the oosperm." The germ is thus the undeveloped organism which forms the bond between successive generations; the person is the developed organism under the influence of environmental conditions—"the person is merely the carrier of the germ plasm, the mortal trustee of an immortal substance."

An elaborate account of germ cells is given, and the significance of the successive events is discussed under the headings fertilisation, cleavage and differentiation, origin of the sex cells, and sex determination. The author asserts that sex is irrevocably determined at the time of fertilisation. As to the mechanism of heredity, as contrasted with the mechanism of development, it consists in the formation of particular kinds of germ cells and in the union of certain of these cells in fertilisation. Germ cells have a certain "specificity." Germ cells of different individuals are not all alike, and such differences are due to one or more differentiating causes or factors—intrinsic or extrinsic—though experience has shown that they are generally intrinsic in the germ. The author shows that in woman, where "there are probably 48 chromosomes and after synapsis 24 pairs of maternal and paternal ones, the possible number of permutations in the distribution of these chromosomes to the different egg cells would be 2^{24}, or 16,777,036, and the possible number of different types of fertilised eggs or oosperms which could be produced by a single pair of parents would be $(16,777,036)^2$, or approximately three hundred thousand billions." It would seem as though the production of unique individuals were the chief purpose and result of sexual reproduction. That the chromosomes play a large and dominant rôle is admitted, and the author compares their behaviour in maturation and fertilisation to the shuffle and deal of cards in a game and apparently with the same object—viz., never to have the same distribution twice. A careful exposition is given of the reasons for assuming that the chromosomes are important factors in heredity and differentiation.

As to the phenomena of inheritance, the author says that "like does not produce like but only somewhat like." Hereditary resemblances are first dealt with, including racial characters and individual characters. Under the latter heading we find interesting references to morphological features, teratological, pathological, and physiological peculiarities, and psychological characters. To Francis Galton is due the credit of being one of the first to bring order out of chaos by dealing singly with traits or characters instead of treating all together. "Mutations" and "fluctuations" are dealt with, and in the end the conclusion is arrived at that every individual is unique—every living being apparently is the first and last of his identical kind. The whole chapter on Mendelism is excellent and worthy of the most careful study as a sound, terse, and luminous exposition of this very practical doctrine; indeed, the author regards "the principles of heredity as established by Mendel as almost as important for biology as the atomic theory of Dalton is for chemistry."

The influence of environment on heredity, or, in the words of Galton, the two sets of factors, "nature" and "nurture," are considered fully, and the author finds that developed characters, whether "acquired" or not, are never transmitted by heredity, the hereditary constitution of the germ not being changed by changes in such characters. It is possible to guide phenomena of heredity and evolution. Accepting this statement, the author gives in the fifth chapter an interesting account of the "control" of heredity and of eugenics, dealing with such well-known subjects as the influence of environment in producing new races, artificial selection, methods of modern genetics, and control of human heredity. The last chapter, on genetics and ethics, or at least a portion of it, was published in 1913 under the title "Heredity and Responsibility."

We have great pleasure in commending the study of these instructive and suggestive lectures to all who are interested in the problems of heredity and environment as they affect the development of animals and man. Much old ground is necessarily traversed, but the comprehensive way in which the subjects are treated makes these repetitions illuminating.

The Chemistry of Colloids.

By W. W. TAYLOR. M.A., D.Sc. London: Edward Arnold. 1915. Pp. 328. Price 7*s.* 6*d.* net.

THE study of the chemistry of colloids grows in importance day by day, and it seems strange that until quite recent years very little progress has been made since Graham's experiments in the early "sixties." But the recent progress

made has been very real, so much so that the chemistry of colloids has now many applications in the industries. After a very clear account in general of the colloids, and a sketch of the researches which have led up to the present position of the study, Dr. Taylor reserves four chapters to their applications. Thus, amongst the semi-colloids are included casein and the soaps. He then proceeds to the modern dyes, discussing their colloid nature, the mutual precipitation of the colloid dyes by other colloids, mordants, lakes, and so forth. Then follows a chapter on tanning, the soil and its purification, in which colloidal processes are undoubtedly concerned, if only in a mysterious way. Lastly, a very interesting chapter is the final one on the applications of colloid chemistry to physiology and biology, as evidenced in the rôle of hæmoglobin in the blood, the action of enzymes, the phenomena of catalysis, and agglutination. All these questions claim attention from the point of view of colloidal chemistry, and this book will be cordially welcomed as the first English text-book on the subject, and as one that sets up an admirable model for others to work upon who, as researches develop, may be tempted to expand the subject.

A Text-book of Insanity and Other Mental Disorders.

By C. A. MERCIER, M.D. Lond., F.R.C.P. Lond., F.R.C.S. Eng. Second edition. London: George Allen and Unwin, Limited. Price 7*s.* 6*d.*

WE remember Dr. Mercier to have defined science as order, system, organisation, arrangement—in short, as the recognition and application of law. His text-book was designed to make our knowledge of insanity in this sense scientific and to arrange the subject in accordance with an orderly system. The second edition which has now appeared carries the attempt farther, and aims to provide a systematic arrangement of the whole subject and of its several parts; and though Dr. Mercier's may not be the best arrangement, it is at any rate an orderly and systematic one pursued with considerable detail.

The first requisite for the study of a subject is to have a clear notion of the subject to be studied, and from the beginning we can see what Dr. Mercier would be at. Considering that it has hitherto been a general assumption, both in medicine and in law, that insanity is disorder of mind (an assumption which is widely held and is embodied in Acts of Parliament), the author strenuously contends that insanity has in common use several meanings which are not distinguished, and that in every one of these meanings the most important ingredient is disorder, not of mind, but of conduct. The argument is that what matters is not what a patient believes or thinks, but what he says and does. It is disorder of conduct on which the main emphasis is laid, and certain of its results are discussed and described in a way and with a fulness constituting, if memory serves us, new features in a book on insanity.

Disorder of mind is, however, an ingredient or constituent of insanity, and we agree with Dr. Mercier that the study of insanity should be preceded by a study of normal psychology. Experience appears to have convinced him that the study of the normal mind and the explanation of the constitution of the normal mind, as given in the text-books of psychology, do not serve the purposes of the student of insanity, and he formulates a new scheme of the constitution of mind specially adapted to the needs of the student of insanity. The scheme may be right or wrong, but among the causes of insanity usually recognised there are too many disconnected surmises, and Dr. Mercier's plan finds a place for those processes of mind whose disorders come under the notice of the physician. The causes of insanity are here reduced to two complementary and relative sets—heredity and stress—each of which is systematically treated, the manner in which they act as causes is suggested, and the stresses are arranged in a systematic manner. Classification is Dr. Mercier's aim here, and no classification of the causes of insanity hitherto proposed has been satisfactory. Dr. Mercier asserts that confusion and cross-classification arise from the failure to distinguish between the various meanings of the word insanity, which may mean a disease or may mean a symptom, and that when these meanings are disentangled, when symptoms are classified by themselves, diseases by themselves, and acute and chronic conditions by themselves, the difficulties of classification will be surmounted. Dr. Mercier suggests three valid arrangements free from cross-classification in substitution for a single arrangement in which the three are blended, but we are not certain that he will wholly escape the reproach of cross-classification. Confusion, too, may be introduced in one or two places by the use of terms with an unusual significance, or at any rate with a significance that is not generally accepted. In the course of the book some clinical types of insanity, hitherto, we believe, unrecognised, are described for the first time.

The book suffers from compression. The author tries to say too much in too small a space. He allows his criticism of his colleagues for acquiescence in the claims of the German school to become too apparent. He is impatient, because he has found it impossible to obtain recognition for the importance of disorder of conduct in relation to insanity, insanity being usually treated as disorder of mind even when psychology is seen to be at fault. He is sore because his views, which amount to a revolution in the concept of insanity and in the treatment of the subject, remain undiscussed. The book appears to have been written in an angry mood from title to index, as if the author were at enmity with every other writer on the subject, and the warning to examinees not to read the whole lest they should know more than their examiners is droll but very aggressive. Instead of an index, we find an argument why this should be missing. The gibe at the reviewers that the absence of an index will hamper their work has some point, for many books are in these days of gross over-production noticed in a perfunctory manner by critics whose knowledge of the contents is much derived from the "contents page." But when Dr. Mercier writes "To add an index to a book that is logically arranged is to take for granted that the reader is not intelligent enough to appreciate a logical argument," does he see that he may demand from his reviewer the perusal of the whole of his work? The author of a book is not necessarily the best judge of whether it is logically arranged, and no arrangement can necessarily be exactly the best one. A reviewer might look for a sequence of ideas which would seem logical to him, might find that sequence broken and conclude that some points were missing, when, in accordance with the author's view of logic, those points were considered elsewhere. In the absence of an index how is the

reviewer to be assisted? Dr. Mercier is surely too reasonable to say "let him read the whole book and read it steadily and carefully," for that is an unfair demand on a reviewer: a man does not drink a bottle of wine steadily and carefully before saying if it is a sound and palatable fluid.

This is a pugnacious, dogmatic, and very clever book, and the general practitioner will certainly obtain from it valuable lessons as to his conception of insanity. It is readable from first to last.

The Diseases of Children.

Edited by Dr. M. PFAUNDLER, Munich, and Dr. A. SCHLOSSMANN, Düsseldorf. English translation edited by HENRY L. K. SHAW, M.D., Albany, N.Y., and L. LA FETRA, M.D., New York. Vol. VII. *Diseases of the Eye in Infancy and Childhood.* By Dr. OSKAR EVERSBUSCH, Munich. *Disorders of Speech and Phonation.* By Dr. MAX NADOLECZNY, Munich. London and Philadelphia: J. B. Lippincott Company. 1915. Pp. 499. Price 21*s.* net.

IN the seventh volume of Pfaundler and Schlossmann's "Diseases of Children," translated by Dr. Shaw and Dr. La Fétra, the treatise on the Diseases of the Eye in Children, written by the late Dr. Eversbusch of Munich, is probably the most exhaustive which has appeared. It necessarily contains little which is not to be found in any of the larger text-books of ophthalmology, but it segregates the diseases which are found in children and thus serves a good purpose in emphasising this particular aspect of the subject. Whether the task was quite worth doing in this elaborate fashion is a matter of opinion, but at any rate it has been done well. The first chapter deals with congenital anomalies and deformities of the eye. It is a fairly complete account. Here and elsewhere authors are mentioned, but no references are given. The second chapter, entitled the "Development of the Infantile Eye," really deals with the anatomy of the eye in the child, and contains much information otherwise difficult of access and little known. The examination of children with ocular affections is treated rather scantily, a knowledge of the ordinary methods of examination being presumed. Then follow chapters on diseases of the eye and adnexa, arranged after the usual fashion of ophthalmic text-books. There is a special chapter on disturbances of pupillary movements. The discussion of the diseases is essentially clinical, very little reference being made to pathology. Treatment is very fully dealt with.

The second part of the volume is taken up with the consideration of a comparatively small but none the less important section of the diseases of children—viz., disturbances in the realm of speech. After a preliminary chapter on the development of the faculty of speech, viewed both physiologically and psychologically, the author proceeds to investigate its disorders by dividing them into two main groups—arrests of development of speech and disorders contracted after speech is acquired. In the former category are placed three subclasses—viz.: 1. Arrests of development on the peripheral sensory side, such, for instance, as total or partial deafness, with or without total or partial blindness. 2. Arrests of development of central sensory origin, including word-deafness, word-dumbness, voluntary whispering, agrammatismus and akataphasia (inability to form sentences syntactically correct), and various forms of stammering. The author defines the last of these as "inability of uttering or correctly forming certain sounds or sound combinations," hence there may be vowel-stammering, stammering in labial sounds, in dental, palatal sounds, L- and R-stammering, &c. 3. Arrests of development in the peripheral expressive mechanism, including lisping in its various forms, and snuffling. The second main group is concerned with disorders arising after speech is acquired, such as stuttering, which is defined as "a spastic neurosis of coördination interfering ..... with the pronunciation of initial syllables or of words in the middle of a sentence. The articulation of every sound is correct." In the same group are disorders of speech at puberty, those associated with various nervous diseases such as chorea, epilepsy, hysteria, and tic, also those that are found in cases of imbecility, and in organic conditions such as encephalitis, infantile cerebral paralysis, facial paralysis, disease of other peripheral nerves and muscles, and so on; mainly, therefore, a symptomatological group. There is a special subsection on the varieties of mutism.

We do not know any treatise in which the manifold disorders of speech in children are so minutely described and their treatment so carefully and practically demonstrated. If the practitioner has hitherto been too often content to assure the anxious parents that the child will "grow out of its defect" a perusal of this book will teach him the urgent necessity of painstaking diagnosis and of systematic treatment. The whole subject has been too much neglected by medical men, with the result that it has become the happy hunting ground of charlatans and quacks of every description. This division of the volume can be cordially recommended to the earnest attention of the inquiring general practitioner, as well as to the neurologist and psychologist. Further, those who are concerned with pedagogy and with phonology might read the book with profit, though we agree with the author in his contention that official medicine should take the subject up from henceforward, for the treatment of disorders of speech should be scientific, not empirical.

The work is excellently printed, though on unnecessarily heavy paper. There are 20 admirable coloured plates and numerous good illustrations.

LIBRARY TABLE.

The Vicious Circles of Neurasthenia and their Treatment. By JAMIESON B. HURRY, M.A., M.D. Cantab. With illustrations. London: J. and A. Churchill. 1915. Pp. 90. Price 3*s.* 6*d.* net.—The establishment of vicious circles in disease is a familiar clinical fact. Dr. Hurry takes neurasthenia, and works out the action of the vicious circle in the different systems of the body affected in that disease. He exemplifies the mode of action in the case of the vascular, respiratory, digestive, and genito-urinary systems, as well as in the psychical sphere. A large number of quotations from other authors, in practically every one of which the words "vicious circle" occur, are adduced to "guard against any possible charge of obsession in reference to the rôle of the circle." The breaking of the circle by treatment is discussed along accepted lines. If there is little that is novel in the book, it furnishes good illustrations of the widespread influence of pathological inter-relations as displayed in the particular case of neurasthenia.

The Body in Health. By M. V. O'SHEA and J. H. KELLOGG. Illustrated. New York: The Macmillan Company. 1915. Pp. 324. Price 3*s.* 6*d.*—This little volume represents the latest addition to the

Health Series of Physiology and Hygiene, a series of popular works intended to present in an attractive form for pupils in the elementary schools accurate information on the hygiene of daily life. The book is freely illustrated by photographs and drawings in order that important matters relating to health may be impressed upon the eye of students. At the end of each chapter a number of problems are set on the subject matter dealt with in the text. It is intended that problems shall be worked out in the class-room and discussed freely between pupils and teachers. This method of engaging the interest and teaching the practical applications of a lesson has been found to bear excellent fruit in schools in America in which the system has been adopted. As an example of the problems set we give the following from the end of Chapter VI., which deals with the heart and blood: "Can you tell when you look at a person whether or not his blood is pure? Why should blood cells be kept in good fighting condition?" Both authors have the faculty of making common-place details attractive, and of investing even dry bones with picturesqueness. The special senses are described as gateways to the mind. The excretory functions are described in a chapter entitled "How the Body Cleanses Itself." The cells are called the little workers of the body and disease germs the enemies of the body. The authors are to be congratulated on their courage in essaying to explain some of the most difficult problems in physiology and pathology to the half-developed minds of children; it would in many cases have been simpler to have shirked these questions or to have circumvented them by subterfuges and inaccuracies. We sincerely hope that this little work will find its way into the hands of teachers in our own elementary and secondary schools.

Materia Medica and Pharmacy for Medical Students, with an Appendix on Incompatibility. By REGINALD R. BENNETT, B.Sc. Lond., F.I.C., Pharmacist and Teacher of Pharmacy to University College Hospital, London. Third edition. London: H. K. Lewis. 1915. Pp. 248. Price 4*s.* 6*d.* net.—The third edition of this useful and practical little work has been completely revised and brought into conformity with the new Pharmacopœia. The pharmacological classification of the previous editions, however, has been retained, and the apothecaries' system of dosage has been included in parentheses after the metric system, which is that now used in the Pharmacopœia.

A Hausa Phrase-Book, with Medical and Scientific Vocabularies. By ALLAN C. PARSONS, M.R.C.S., L.R.C.P. Lond., D.P.H. Oxon., Sanitary Officer, Gold Coast. Oxford University Press (Humphrey Milford). 1915. Pp. 164. Price 7*s.* 6*d.* net.—This book contains a series of phrases with Hausa translation, intended for those who wish to gain a speaking acquaintance with that language. It is divided into three parts: Part I., phrases in general use, consisting of miscellaneous idioms and phrases relating to household management, travelling, stable management, and hunting; Part II., departmental phrases, political and administrative, military and police, public works, forestry and agriculture, customs, commercial, mining, nursing, and hospital management and medical terms. Part III. contains English-Hausa and Hausa-English vocabularies of medical and scientific words. From the point of view of the would-be learner the chief criticism we would make is on the absence of any anatomical dissection of the language, in consequence of which the sentences seem to call for individual memorisation, throwing the same strain upon a retentive memory that is needed for mastering Chinese ideographs. It would be a huge task for the student wishing to make practical use of the book to turn up a sentence that would serve him to express the particular idea in his mind, whether assertion or question. In a book of this description we think the more scientific plan would be to build up progressive models of expression which could be varied with an increasing vocabulary by the mere change of one or two words. Another difficulty is that no scheme of phonetics is appended to enable the reader to estimate the correct pronunciation of the Hausa words. From the point of view of the printing, also, we think that it would have been much better to use different types for the English and the Hausa. The book, doubtless, will be of service to residents in the Hausa-speaking districts of the West Coast of Africa after they have already made some acquaintance with the language.

JOURNALS.

The British Dental Journal.—In the June issue of this journal there is a paper by Mr. E. D. Davis on the Pathology and Treatment of the Maxillary Antrum. The author considers that antral suppuration is but seldom traceable to dental causes, and when due to such causes he considers that the third molar is most commonly the offending tooth. Alveolar puncture, in his opinion, is highly unsatisfactory, and even when the cause is dental in origin he thinks that extraction of the tooth followed by syringing the antrum from the nose gives better results than irrigation through the tooth socket. Mr. Wesley Barritt has an interesting paper on Synthetic Drugs and Chemicals, and Mr. Claude Colyer a letter on Army Dentistry, in which he suggests some methods of treatment based upon his experience with the Expeditionary Force.

THE METROPOLITAN WATER-SUPPLY.

THE report on the condition of the Metropolitan water-supply during the month of February, 1915, was issued last week. The results are of more than usual interest owing to the fact that in the Thames basin the rainfall during February was 4·57 inches, which is 2·66 inches above the average mean rainfall for that month during the previous 32 years. The statement shows that the Thames water was in good condition from the 1st to the 3rd and from the 24th to the end of the month; on the remaining days, however, it was more or less coloured and turbid while the increased water was flowing. The samples of water collected at the different works were clear, bright, and free from suspended matter, showing that the storage and filtration systems adequately deal with the increased suspended matter and colouring in the raw water caused by a higher rainfall. In Dr. A. C. Houston's official report on the chemical and bacteriological examination of the water-supply there is an abundance of detail, and the numerous tables show what an enormous amount of laboratory work is done in this direction. Owing, however, to the heavy cost of publication the figures given in the report must be regarded, Dr. Houston states, as summaries and averages only of complete details. In regard to chemical examination, the *raw* Thames waters deteriorated and the Lee water also, except as regards albuminoid nitrogen, while the *raw* New River water improved. The three *raw* waters compared with the averages of

1914 yielded results worse than their respective averages as judged by the albuminoid nitrogen, permanganate, turbidity, and colour tests, while all the *filtered* waters yielded also worse results. In the bacteriological examination all three *raw* waters contained more bacteria than their respective averages in the previous year. The *filtered* waters, generally speaking, yielded not unsatisfactory results. It is shown that in February, 1915, whereas 100·0, 90·0, and 80·0 per cent. of the samples of *raw* Thames, Lee, and New River water respectively contained typical B. coli in 1 cubic centimetre (or less), 62·7, 80·0, and 59·4 per cent. of the *filtered* samples derived from these rivers contained no typical B. coli even in 100 times as much water—namely, 100 cubic centimetres. Even, therefore, under conditions of pressure when a greater demand is made upon the capacity of the purifying installations the water reaches the consumer in a bacteriologically safe condition. This speaks eloquently of the high efficiency of the methods of purification adopted, storage and filtration, and the scientific investigations made on these questions by Dr. Houston in the past may well entitle him to be proud of the satisfactory practical results to which that work has led.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

OXYDOL.

(NEW OXYDOL PRODUCTS, LIMITED, 23, FITZROY-SQUARE, LONDON, W.)

WE have examined two samples of peculiarly pure hydrogen peroxide sold under the name of oxydol. Both samples were bright, colourless, and non-acid. We made a careful search for the common impurities of hydrogen peroxide such as baryta and sulphuric acid and chlorine, but with negative results. One sample contained peroxide of hydrogen equal to three volumes of available oxygen and the other six volumes of oxygen. For medicinal purposes, of course, peroxide of hydrogen should show a high degree of purity. Oxydol is well adapted for antiseptic treatment, and it is necessary, particularly in the treatment of wounds, that no acid should be present, as this may cause irritation.

ENERGEN BREAD.

(THE THERAPEUTIC FOODS COMPANY, BEDFORD CHAMBERS, COVENT GARDEN, LONDON, W.C.)

Energen bread according to our analysis resembles the composition of ordinary bread with the important exception that a proportion of the starch has been eliminated and an addition of some fat has been made. It may be described, therefore, as a partial gluten bread, and its texture suggests this. According to our analysis the bread has the following composition: moisture, 7·20 per cent.; mineral matter, 0·60 per cent.; protein, 32·19 per cent.; carbohydrate, 52·60 per cent.; fat, 5·44 per cent.; and fibre, 1·97 per cent. The bread is palatable and provides a suitable food in those cases in which some tolerance for carbohydrates is exhibited. There seems little doubt that the diabetic patient in some instances may take a regulated quantity of carbohydrate, but, of course, the allowance must be watched. Energen bread is useful for this purpose.

PIPERAZINE CITRATE.

(ALFRED BISHOP, LIMITED, 48, SPELMAN-STREET, LONDON, N.E.)

The introduction of piperazine in the form of citrate enables this base to be given in the shape of a non-hygroscopic and non-volatile salt. The preparation before us is well made and occurs in fine white granules. It is readily soluble in water, the solution having a saline and slightly bitter taste. It appears to be well established that piperazine or its salts do afford relief in gouty conditions. It has also been employed in neuritis and sciatica. Its mode of action does not appear to be quite clear, but it is generally stated to have a soluble action upon uric acid, piperazine urate being a much more soluble and diffusible salt than the ordinary alkaline urates. The citrate appears to be a very good form for exhibition in these cases.

TRI-MUR-TI.

(THE TRI-MUR-TI COMPANY, 11, HILLS-PLACE, OXFORD-STREET, LONDON, W.)

This is an opalescent, pearly-looking jelly containing a large proportion of pure solidified petroleum associated with oil of peppermint. It is primarily intended as a laxative, but, of course, the oil of peppermint contributes therapeutic properties, serving, as is well known, as an anti-spasmodic or carminative. By those who like the taste of peppermint, as children do, the preparation is well taken. On the whole it seems to be a useful combination, and it is well prepared, showing a perfectly uniform consistence. According to our analysis it contains 94 per cent. by weight of petroleum. This, of course, gives a higher figure by volume according to the density of the hydrocarbon oil used.

LYSOL ANTISEPTIC TOILET SOAP.

(MESSRS. CHAS. ZIMMERMANN AND CO. (CHEMICALS), LIMITED, 9 AND 10, ST. MARY-AT-HILL, LONDON, E.C.)

This is an agreeable toilet soap reinforced with 5 per cent. of the well-known antiseptic and detergent lysol. On decomposing the soap with acid and distilling, about $2\frac{1}{2}$ per cent. of cresols was obtained. It very freely lathers, yielding a bulky foam, and leaving a marked sense of cleanliness. It shows an alkaline reaction to phenolphthalein, the presence of the alkaline lysol adding materially to the detergent properties of the soap. It is agreeably scented, and there is little evidence of the presence of lysol to the smell.

TWO AGREEABLE COCOAS.

(MESSRS. CADBURY BROS., BOURNVILLE, BIRMINGHAM.)

Cocoa is fulfilling an important rôle just now, inasmuch as its nutrient and mildly stimulating qualities are much appreciated by our soldiers, both those actively serving and the wounded. We have received from the above firm two samples of cocoa which upon making an analysis show certain differences in composition. Bournville cocoa (flavoured) gave the following results: moisture, 4·87 per cent.; mineral matter, 8·60 per cent.; fat, 26·55 per cent.; alkalinity of ash in terms of potash, 3·94 per cent. The unflavoured essence gave the following results: moisture, 3·30 per cent.; mineral matter, 5·05 per cent.; fat, 25·62 per cent.; alkalinity of ash in terms of potash, 0·70 per cent. Both are high-grade, attractively flavoured cocoas, the Bournville showing an increased "solubility" over the unflavoured specimen, due to the presence of a larger percentage of salts, as revealed in the analysis.

THE LANCET.

LONDON: SATURDAY, JUNE 26, 1915.

Midwives and Moral Character.

A RECENT decision of the High Court with reference to a midwife who had been struck off the official register by the Central Midwives Board was calculated to give the impression that the decision of the Board had been reversed upon appeal as to an important question of principle. This, however, we believe, is not the case. The matter was brought before the Central Midwives Board at a recent meeting, when a letter was considered which had been addressed to the Board by the honorary secretary of the Midwives' Institute. This letter referred to the fact that the charge upon which the Board had ordered the midwife's name to be removed from the Roll was one of immorality, and acknowledged that the reversal of the Board's decision was on account of a technical omission in connexion with the proceedings taken. It went on, however, to point out that the result of the case was likely to lay the decision of the judges open to very serious misconstruction in the mind of the general public. The secretary of the Midwives' Institute had therefore been instructed to forward to the Board a resolution passed by the Institute that "The Midwives' Institute respectfully asks the Central Midwives Board to make a pronouncement, which can be reported in the press, that in spite of the High Court's reversal of the Central Midwives Board's decision in a recent case, the Board will, as it has heretofore done, continue to support the moral as well as the professional status of practising midwives." The reply to this, which the Board resolved to make at the meeting referred to, is decisive and eminently satisfactory. It refers to the judgment of the court as having reversed the Board's decision with regard to the midwife in question, but describes it as having confirmed the Board in its position as the authority determining what is or is not misconduct in a midwife, and as having decided that misconduct is not to be limited to misconduct in a professional sense. The Board, further defining the principles upon which it is prepared to act in such matters, stated its opinion that conduct which before enrolment would render it impossible to certify that a candidate was of "good moral character" renders her, after enrolment, liable to be removed from the Roll for "misconduct"; and the Board declared that there was no likelihood that it would depart from this position.

The declaration thus made is, as we have said, eminently satisfactory. To have found that the Board had been compelled by legal decision to abandon all consideration of the moral character of a midwife after once admitting her to practice among the women who might seek her aid, would have been more than disconcerting. It would have been disastrous, and we can well understand the desire of the Midwives' Institute to obtain a pronouncement which, through the medium of the press, should do much to correct the wrong impression likely to be conveyed by the report of the appeal referred to. The practice of a midwife, implying attendance upon women and to treating them in, and in connexion with, pregnancy and childbirth, brings her in contact with females of the humbler classes of society, with married women of the strictest respectability, and with those in very different circumstances. It is difficult to imagine any person whose opportunity for mischief among her sex would be greater if she herself were to be of loose morals and at the same time endowed with the training and skill which the Midwives Act, 1902, was passed to promote. The Act itself clearly states the intention of those who framed it, for in Section 2, where it provided for the immediate admission to the roll of persons having certain stated professional qualifications, it declared that the possession of these must be supplemented by the possession of a "good character." It is in accordance with the intention thus expressed that in the regulations under which midwives are now admitted a good moral character is stipulated for, and it would be altogether illogical and absurd if the power to remove from the Roll on account of proved immorality were withheld. It is not, however, only the desirability of a right to remove undesirable persons from the official roll which we are now discussing. We are rather insisting upon the performance of the duty to remove such persons, both for the sake of the pregnant women who may come under the midwives' care, and for the credit of the women who have made midwifery their profession.

The Midwives Act sought to confer a benefit upon women at large by providing for them a body of trained and enrolled members of their own sex to attend them in labour. Incidentally, it deprived many members of the medical profession of a not unimportant percentage of their usual emoluments, while leaving them in the doubtful and unsatisfactory position of consultants to whom resort is to be had compulsorily in emergencies. It did more, however, than to provide for the training of midwives, and to hand over to them a share in a particular branch of medical practice. It conferred upon them a privilege, denied to medical men, of practising without any competition from the unqualified of their sex. Any man, however ignorant, however dishonest or immoral, may impose upon the ignorant by pretending to treat disease, so long as he does not pretend that he has medical qualifications. He may make a profit, indeed, by boasting that he does not possess them. But for the past five years women not certified under the Act have not been

permitted to practise as midwives, even if they do not pretend to be registered as such. Midwives, therefore, now are members of a specially protected body. It is, however, of high importance that those enjoying unique and exclusive rights should be beyond question worthy to enjoy them. And in the case of midwives the privilege must be thoroughly deserved by the possession of an unblemished character. This is necessary for the sake of the patients treated and for the protection of the public. It is also, as is shown by the recent action of the Midwives' Institute referred to above, entirely in accord with the wishes of the midwives themselves. There is good cause for satisfaction in the fact that this representative body should have shown itself jealous for the honour of those for whom it is qualified to speak, and by its prompt action should have strengthened the hands of the Central Midwives Board in the fulfilment of its disciplinary functions.

The New Salvarsan Products.

A COMMUNICATION was made on behalf of the Medical Research Committee to THE LANCET of April 10th with regard to the control which the committee, at the request of the Board of Trade, is exercising in the present national emergency over the French and British preparations of salvarsan which are issued for sale in this country. It was then announced that the committee were satisfied that the products tested biologically under their direction were not inferior in safety or in efficacy to the original German preparations. From a further communication, which we publish in this issue, it will be learned that both laboratory and clinical trials had proved satisfactory in the hands of the Medical Research Committee before the issue of the new salvarsan products was authorised, and as these have been now for some months at the disposal of the medical profession in this country, it seems to us quite timely that the committee should seek to collect from those who have had experience of their use a detailed record of their practical application.

We have nothing to add to the arguments set out by the Medical Research Committee to show that the making of accurate reports of all cases under treatment with the new salvarsan products will be of the greatest value, both now and hereafter. The results of the administration of salvarsan can at present be only imperfectly explained, and the only possible way to arrive at more perfect clinical treatment is by keeping careful notes of all cases, so that by collating those notes from time to time we may arrive at common lessons pointing the way to improvement. The communication which we publish this week says that, to appraise the significance of clinical experience after the employment of a particular batch of any given preparation, it is of great importance to have as complete a record as possible of the other cases which have been treated with the batch in question, for records of this kind, when referred to the scientific workers engaged on behalf of the Medical Research Committee in the biological testing of the products, would allow a study of the closeness of the correlation which may exist between the results of clinical observers on the one hand, and laboratory experts on the other. With such help it would become clearer whether the system of controls which has hitherto been applied, and which has followed the lines laid down by the experience of EHRLICH and his co-workers, requires any modification.

We join heartily in the request of the Medical Research Committee that records of this kind may be sent to the secretary of the committee, St. Stephen's House, Westminster. In the treatment of any disease by a series of preparations it is obvious that three possible sources of error and confusion must exist. The preparation, however carefully standardised, may not have constant virtues; the technique of administration will vary in its perfection; the patient has his fluctuating physiological properties and his idiosyncrasies. These sources of error and confusion can be restricted steadily, and can even be reduced to a point where they become negligible, but only by a steady comparison of carefully recorded results, and the more results that are available, and the greater the precaution that is taken to render them trustworthy, the sooner is the element of empiricism removed from practice.

Annotations.

"Ne quid nimis."

THE PLAGUE MENACE IN THE UNITED STATES.

WE have on several occasions drawn attention in these columns to the threatened danger of an invasion of the United States by plague. At the present moment the matter appears to be giving rise to some anxiety even in American official circles, and Dr. W. C. Rucker, Assistant-Surgeon-General of the United States Public Health Service, has lately set out certain facts and considerations bearing upon the subject in an article published in our American contemporary, *Public Health Reports*. Dr. Rucker points out that plague spreads more frequently from one country to another by water than by land, and that this diffusion is due to rats which travel on board ship from infected to healthy ports. At the present moment plague is widely spread over almost the whole of the known world, and as the United States are in frequent communication with foreign countries by shipping the arrival of infected rats is both possible and probable. Plague is at present occurring in the island of Cuba, and danger is also apprehended from infected ports in Brazil as well as from others in Peru and Ecuador. There is also frequent communication with the infected ports of India and the Far East as well as with those in North Africa and the Near East. No human cases so far as is known have occurred during the present year in the United States, but infected rats are still being found from time to time in the port

of New Orleans and in a less degree at the Pacific port of Seattle. It has even been suggested that if careful search were made at other ports more infected rodents would probably be discovered. Dr. Rucker does not include in his enumeration of the sources of the plague danger the focus of enzoötic plague existing among the ground squirrels which infest the State of California, although up to quite recently infected animals have been caught in that region. There is risk that around the towns at least rats may become infected by entering the burrows of the ground squirrels and convey the infection into human dwellings. In discussing the action to be taken for resisting the invasion of the United States by plague, Dr. Rucker classes the measures under four headings—namely, enforcement of maritime quarantine, the prevention of the embarkation and disembarkation of rats at ports, the immunisation of the human population by inoculation with Haffkine's prophylactic, and lastly the rendering rat-proof of all dwellings and workplaces. As to maritime quarantine alone it cannot, he says, prevent the diffusion of the disease, and if carried out it must be done at the expense of commerce. The prevention of access of rats to ships, however valuable in itself, cannot be absolutely relied upon to keep away the disease altogether. As regards general protection of the human population by prophylactic inoculation, experience has shown that it is impossible to secure this to any great extent except where virulent and fatal epidemics have already caused ravages among the people and created panic. There remains, therefore, in Dr. Rucker's opinion, only the carrying out of general rat-proofing of all dwellings and places of business, a measure on which he believes implicit confidence can be placed to prevent any serious consequences even if infected rats should secure a landing and infect the local rat population. Lastly, Dr. Rucker expresses the opinion that persons who live or work in rat-proof buildings need have no fear of plague.

CHILDBIRTH AMONG CENTRAL AFRICAN TRIBES.

IT has been said that among savage tribes the act of parturition is less painful than among civilised people, and even that it is painless and free from danger, so that any assistance or medical aid is unnecessary. Dr. Carlo Pulieri, who for eight years practised in the Belgian Congo, has written an interesting letter on this point to *La Clinica Ostetrica* (May 30th), in which he declares that black women suffer as much as white and like them are subject to all the embarrassments of their condition, and that if they had the will and means to avail themselves of skilled assistance the mortality both of mothers and children would be sensibly diminished. Besides the fact that they have no faith in medical aid, the inveterate prejudices and beliefs of the natives prevent them having recourse to it. Among certain tribes, for example, childbirth is surrounded by the greatest mystery, nor may the husband be present, while the parturient woman, when the pains begin, betakes herself to some secluded corner in the forest with one of her friends and gives birth to her offspring there, seated on the ground with her back against a tree or leaning against her friend's breast. The placenta being expelled, the cord is cut with any knife that is to hand, the placenta buried, and the woman having been cleaned up with leaves, walks back to her hut with her baby in her arms. At other times labour takes place in the hut itself, but always on the ground in the position above described. The friend gets ready boiling water and performs any little services that previous experience suggests to her; bleeding is restrained by bathing with hot water and on the cut end of the cord some earth is placed or the powder of a particular kind of red wood mixed with palm oil. The same composition is also smeared on the large fontanelle, probably as a protection. All this, however, does not take place without groans, weeping, and gestures of despair, which afford very clear indications of the suffering the woman is undergoing. This description applies to a normal labour, but it is far otherwise if everything is not straightforward. A shoulder presentation, for example, would mean certain death for both mother and child. In less difficult cases, or where there are serious complications, the attentions of the friend are unfortunately exercised in such a manner as to attempt useless and dangerous manual efforts to deliver so that the woman's life is in serious peril. On one occasion a woman was brought to Dr. Pulieri at the hospital, who had been left for three days with the fœtal head out of the vagina, none of those present being able to extract the child. Manual delivery of the placenta is never practised, and no one troubles to ascertain whether expulsion is complete, the woman being often left for days with the afterbirth in the vagina or hanging half out. Shortly before he left an American missionary sent him a woman who had been suffering for four days. She had a temperature of 39·6° C., thready pulse, œdematous and bleeding genitals, enormously distended bladder, and the fœtal head fixed in the pelvis. Dr. Pulieri pushed up the head, emptied the bladder, and extracted the dead child, but the woman died a few hours afterwards. No one present at the labour knew anything about retention of urine, or would have possessed any means of preventing or relieving it. It is indisputable, says the writer, that labour among savage tribes is more easy than with us; conditions of climate, life, habits, and age eliminate many complications. Deformed pelves are very rare, the women are very young, and infection is not common among them. But these women suffer during labour, and although sepsis is rare there are cases in which it is severe and certainly due to lack of proper assistance.

THE TREATMENT OF ACUTE LOBAR PNEUMONIA.

IN a recent number of the *Polyclinic* Mr. A. J. Mathison describes what he considers an almost certain specific for the treatment of acute lobar pneumonia. Its use may be confidently expected to result in recovery, he says, unless the patient has already been ill several days. Of his own 65 patients all but one recovered; 13 had normal temperatures within a few hours. The treatment consists in giving the following mixture regularly from the moment of diagnosis until the temperature becomes normal:—

℞	Potassii iodidi	ʒi.
	Creasoti	ʒss.
	Spir. rectif.	ʒii.
	Ext. glycyrrh. liq.	ʒiii.
	Aquam ad	ʒvi.

M. A tablespoonful to be taken every four hours.

The treatment produces an abortive type of pneumonia in most cases. Local applications to relieve pleuritic pain may be added; good nursing, though

a welcome aid, is not essential; no powerful therapeutic measure, such as cold bathing, should be used with the treatment, which is as specific for pneumonia as quinine is for malaria. The diagnosis of Mr. Mathison's cases seems to have been made on the symptoms and physical signs they presented, without the aid of bacteriology. The simplicity of the treatment he recommends is no less striking than the success with which it would seem to have met in his hands and in the hands of other medical practitioners he names; a modern Tertullian might even be tempted to say of it, *Credo quia absurdum.*

AN EDUCATIONAL LUNCH-ROOM.

A VERY interesting experiment which at the present time might well be tried in this country has recently been started by the Department of Health in New York. An educational lunch-room has been opened for the use of the employees of the department, the object of which is primarily to provide a wholesome luncheon at cost price, and secondarily to educate the patrons in the subject of food and nutrition. From a copy of a specimen menu which we have received some idea is obtained of the luncheon served and of the methods followed to educate the customers in all questions relating to food values. This programme is divided into five columns. First is given the name of the dish, then the price, then the quantity, next the calorific value, and finally the protein content. A few examples are as follows: 4 oz. of lean beef are provided, costing 20 cents, the calorific value of which is 140 and the protein value 30; an average helping of potatoes, costing 5 cents, gives 150 calories and 4 grammes of protein; 3 oz. of ham, costing 15 cents, give 260 calories and 20 grammes of protein, and so on. These specimen meals show at once the foods which do or do not supply a sufficiency of calories or proteins, and the most economical way therefore in which each can be obtained. The experiment will be watched with interest, and though progress may possibly be slow yet the subject is more likely to be appreciated by this objective teaching of the lunch-room with its scientific menu or "food wisdom" notes than in any other way.

GASTRIC HEADACHE.

THE condition popularly known as "sick headache" or "bilious headache" has received little attention. Probably because the attacks are transient and do not endanger life or injure health it is regarded as one of those minor ailments scarcely worthy of the investigator. Yet it is a very common affection, and, as those who suffer from it well know, a most distressing and at times disabling one. In the *American Journal of the Medical Sciences* for May Dr. W. F. Cheney has brought forward evidence that at least one form of headache, probably known as "sick headache," is due to gastric disorder. This affection he terms "gastric headache." The symptoms are well characterised. The headaches are usually periodic, and may occur but once in a month or a week. They usually come on while the patient is in good health and are of variable duration, but rarely last more than 24 hours. He may awaken with the pain in the morning, which grows worse as the day goes on, or it may come on in the evening, persist during the night, and wear off after he rises. The pain may take the form of hemicrania or involve the whole head. Sometimes nausea and vomiting accompany the pain, giving rise to the term "sick headache," but in other cases no gastric disturbance is even suspected. On the other hand, there may be evidence of gastric disorder, such as belching or water-brash, or a sense of distension after meals, an abnormal appetite, or a persistent sour taste in the mouth. In a third group habitual indigestion of the hyperchlorhydria, atony, or chronic gastritis type is complained of. At the times of the headache the gastric symptoms are intensified. Dr. Cheney has investigated the gastric functions by means of test meals and found that the most frequent disturbance is loss of gastric motility. Gastric secretion may or may not be normal, but the important fact is delay of food in the stomach. If patients with this abnormality indulge in an unusually heavy meal or eat when tired or exhausted by mental or physical exertion headache is likely to result. The following is an example. A well-nourished man, aged 40 years, had suffered from headaches for seven or eight years. At first they occurred about once a week, but recently as often as every second or third day. Nausea usually accompanied headache, but rarely vomiting. The appetite was poor and much gas was belched after eating. Physical examination was negative, but after the Ewald test meal the total amount of stomach contents obtained was large, 176 c.c., and even after its removal a loud splash could be elicited. The total acidity was 72, with free HCl 36 and combined HCl 20. On inflation the greater curvature was found 4 cm. below the navel, but there was no peristaltic wave. The diagnosis was atony with hyperchlorhydria. A soft non-irritating diet with restriction of acid and highly seasoned foods was advised, and nux vomica was given after meals. As the patient spent long hours in an office he was urged to take more exercise out of doors. The headaches practically disappeared and recurred only at long intervals after an indiscretion in diet or work. Dr. Cheney does not suggest how the loss of gastric motility produces headache. The explanation seems to be that it leads to the formation of some toxins which are absorbed into the system. The foul tongue and breath—which may be observed in these cases and which he does not mention—point to this. He says that constipation is frequently present, but the condition is commonly observed in a most severe form without any constipation. However, a purgative, especially one which is an intestinal disinfectant, such as calomel, seems to shorten the attacks. Dr. Cheney has shown that these headaches are often due to gastric disorder, but we would suggest that the toxæmia on which they depend may also be due to some intestinal disturbance, or even to hepatic trouble—to revert to the old view.

THE NODAL OR A.-V. RHYTHM.

BY nodal rhythm there is meant synchronous or almost synchronous contractions of the auricles and ventricles. Instead of the latter succeeding the auricular systole at an interval of 0·12 to 0·16 second the two chambers contract together, due to the excitatory impulse reaching both chambers at the same time. This impulse originates at the A.-V. node, situated at the upper end of the bundle of His and equidistant, functionally, from each chamber. Such a dislocation of the "pacemaker"

of the heart from its normal site the sinus, to this secondary and less rhythmic centre was thought at one time to be distinctly rare. But this opinion is now less strongly held since graphic methods of examination allow of its recognition. It gives rise to no symptoms, it does not influence rate, and for these reasons no doubt is less often recognised than would otherwise be the case. There are two conditions which may induce it. One is where the sinal rhythm is so slowed that this less rhythmic secondary centre is allowed the opportunity of initiating its otherwise dormant rhythm. The other is where the nodal rhythmic activity is enhanced in proportion to that of the sinus. Instances of both these kinds are known. In a recent issue of *Heart* Dr. E. E. Laslett reports one where the nodal rhythm is provoked through sinal slowing. Its rate was 53 to 59 per minute. Examples of heightened nodal rhythm replacing the sinus have been recorded by Cowan, and in several of his cases microscopical examination showed definite inflammatory changes involving the nodal tissue. Another case has been reported (Lea) where similar increased nodal activity occurred. In this case, however, its rhythmic rate so closely approximated to that of the sinus that the slight changes of sinal rate due to respiration, a quickening in inspiration and slowing in expiration, resulted in alternate phases of sinal and nodal rhythm, sinal (normal) rhythm occurring during inspiration, nodal rhythm during expiration. The nodal rhythm may not be without practical interest, in spite of its offering no subjective symptoms, since it has also been shown that phases of this character may occur at certain stages of chloroform anæsthesia. These latter observations have, at the moment, been confined to animals only, but their significance remains to be estimated clinically.

THE ETIOLOGICAL FACTOR IN CEREBRO-SPINAL FEVER.

IN another column we publish an article by Dr. R. Donaldson under the title of "A Contribution to the Study of the Etiological Factor in So-called Cerebro-spinal Fever." He makes various observations in regard to the bacteriology of cerebro-spinal fever which are not in accordance with the views generally held, but which are certainly suggestive, and if corroborated by other observers would necessitate considerable modifications of the opinions hitherto set forth as to the etiology and nature of the disease. Dr. Donaldson's observations were made during the outbreak of cerebro-spinal fever in Reading, and he examined the cerebro-spinal fluid in about 60 cases, so that his experience is considerable. At the outbreak of the disease he believed, like many others, that the meningococcus of Weichselbaum was responsible for the disease, but he now enunciates a new theory. He relates two cases, one of pyæmia with a history of preceding gastro-intestinal disturbance followed by a prolonged illness, and a second, which, while showing symptoms of meningococcal infection, might have been attributed to middle-ear disease followed by an abscess in the brain. From each of these cases similar organisms were isolated. Dr. Donaldson then proceeds to state that in all the fluids and purulent exudates from cases of cerebro-spinal meningitis which he examined he observed one common factor—namely, the presence of diphtheroid rods, together with Gram-positive and Gram-negative diplococci; all the various types of form were reproduced in cultures from the two cases to which we have just referred, and he therefore concludes that they were due to the same infective agent as was responsible for the epidemic that occurred in Reading. After a full description of the cultural characters of the organisms, their morphology and staining reactions, and the results obtained by inoculations in animals, the conclusion is arrived at that the causal organism of the epidemic dealt with was a diphtheroid rod closely related to the Klebs-Löffler bacillus. This rod appeared as a pleomorphous organism, which might give rise to Hoffmann-like forms, to what appear to be meningococci, &c. He maintains that this organism is very widely spread in nature in one of its most resistant forms, and "it is this form and not the meningococcal one which is transmitted from one to another." Dr. Donaldson's propositions deserve careful study, but we consider that further observations are necessary and hope that other bacteriologists may be stimulated, as opportunity arises, to investigate along these lines. The suggestion that the struggle of a new disease to win a place among epidemics is being witnessed requires further evidence before it can be accepted, but Dr. Donaldson has certainly given sufficient cause for attention and investigation.

ALKAPTONURIA, WASSERMANN'S REACTION, AND OSTITIS DEFORMANS ALKAPTONURICA.

IN a lengthy article of 130 pages illustrated with 19 reproductions of skiagrams and numerous curves and figures, Dr. G. Söderbergh[1] gives a new clinical account of the four cases of alkaptonuria hitherto described in Sweden, drawing particular attention to the fact that alkaptonuria without a previous syphilitic infection may give rise to a positive Wassermann reaction, and to a chronic deforming arthritis in many ways comparable to Paget's disease of the bones and joints. As is well known, alkaptonuria is characterised by the occurrence of homogentisinic acid ($1\text{–}3\text{–}5\text{–}C_6H_3(OH_2)CH_2COOH$), otherwise known as dioxyphenylacetic acid, in the urine. This acid is partly endogenous in origin, or derived from the tissues, and partly exogenous, or derived from the proteins of the food. It is known to have two mother-substances or precursors—namely, tyrosin ($1\text{–}4\text{–}C_6H_4OHCH_2CHNH_2COOH$) and phenylalanin ($C_6H_5CH_2CHNH_2COOH$); if an alkaptonuric person is fed with lævo-rotatory phenylalanin, about 90 per cent. of the substance is excreted in the urine as homogentisinic acid. The disorder is known to be very chronic, mainly affecting males, and to be familial in incidence. Time was when alkaptonuria was regarded as a harmless type of abnormal metabolism, a metabolic "sport," as breeders might say. Söderbergh, however, lays stress on the troublesome and pathological associations it may have with the very rare disease ochronosis which often complicates its later stages, with the chronic arthritis to which Allard and Gross drew attention in 1909, with the cardio-vascular disease emphasised by Kolaczek in 1910, and with the occurrence of a positive Wassermann reaction in the blood. He gives a full account of the four Swedish cases of alkaptonuria with ochronosis, one of them a new case of his own. This patient, a peasant aged 42, exhibited a round kyphosis and rigidity of the whole dorsal and upper lumbar spinal column, thickening of the spine of the right scapula with waviness of

[1] Zur Klinik der Alkaptonurie. Nordiskt med. Arkiv, Stockholm, 1915, Inre Medicin, xlviii., Hft. 4, No. 19.

its inferior margin, rounding of the lower margin, and increased thickness of the bone generally; the iliac crests were thickened also. Examined with the X rays, his bones generally and the basis cranii in particular showed increased translucency; the edges of the lumbar vertebræ were pressed outwards and thickened. Ochronosis and a strongly positive Wassermann reaction were found to be present. Söderbergh gives 48 pages to the relation between alkaptonuria and Wassermann's reaction, with experiments to illustrate the connexion between the two. His own patient gave a negative reaction after a month's treatment with mercury and iodide; then 15 grammes of racemic tyrosin were administered in six hours, and within 23 hours the patient once more gave a positive Wassermann reaction. The second patient gave a similar result when fed with tyrosin; the fourth patient gave a weakly positive reaction; while in the case of the third patient the tyrosin was by accident not exhibited at the right hours, and the negative reaction remained unaltered by its administration. None of the four patients gave any sign or history of syphilitic infection apart from the evidence furnished by Wassermann's reaction. The effect of 15 grammes of lævorotatory tyrosin on the reaction of two syphilitics and one healthy person was negative. Söderbergh quotes a series of laboratory experiments proving that increasing quantities of homogentisinic acid inhibit hæmolysis in hæmolytic systems either with or without antigen; increasing amounts of the acid may produce a kind of deviation of the complement, and may convert a weakly positive into a strongly positive serum and a negative serum into a positive. In relatively small amounts the acid may sometimes appear to promote hæmolysis; further light on this point is required. Phenylalanin gave results similar to those obtained with homogentisinic acid, but even more irregular. Attention is drawn to the fact that the production of the acid in the body, or at any rate its excretion in the urine, is very irregular at different hours of the day and on different days, whether the patient is starving or on a constant diet. These variations Söderbergh attributes to variations in the endogenous production of the acid; the acid is produced in the tissues and not in the intestine, and it is argued that other substances (such as phenylalanin and perhaps benzoquinone acetic acid) may also influence the Wassermann reaction in these patients. Söderbergh sums the matter up by saying that the amino-acid diathesis, of which alkaptonuria is one manifestation, may by itself produce a positive Wassermann reaction. He argues that very possibly the alkaptonuric lacks a ferment in his tissues to break down the homogentisinic acid, which is, after all, a normal product of metabolism. He connects Wassermann's reaction with the quantity and quality of the amino-acids present in the blood, and claims priority in this conception, which has since been elaborated (latterly without mention of his name) by Much, of Hamburg. Söderbergh quotes experiments to show that the administration of potassium iodide may lessen the excretion of homogentisinic acid by an alkaptonuric patient, the quantity falling from an average of 8·5 to an average of 5·5 grammes per diem. This may explain the conversion of a positive into a negative Wassermann reaction by iodide and mercury noted above. Discussing the symptomatology of ostitis deformans alkaptonurica, he gives very full details of the pathological changes in the bones and joints of the four patients he has examined; he finds comparatively little about the disease in the literature of alkaptonuria. All four exhibited kyphosis and stiffness of the spinal column resembling spondylitis deformans, with circumscribed or diffuse osteophytic thickenings of the pelvic girdle and scapula; the bones generally showed poverty in calcium salts, the results of the deformities rather than of the disease. The intervertebral discs were thinned and partially or even completely calcified. Söderbergh is unable to fit these bony changes into any of the recognised diseases of the bones. The prognosis *quoad vitam* is good, but bad *quoad valetudinem*; treatment by potassium iodide, possibly with mercury, is certainly to be recommended. He thinks that Paget's disease of the bones may prove on closer examination to be, like ostitis deformans alkaptonurica, primarily a disease of the intermediary metabolism.

THE SUPERSTITION OF FLAT-FOOT.

THE current view that most cases of static disability in the feet are due to giving way of the arch of the foot has been traversed by Dr. R. W. Lovett in a recent issue of the *Journal of the American Medical Association*. For the term flat-foot, he would substitute "foot strain." He, of course, admits that flat-foot exists, but would restrict the term to cases in which the ground is touched where the arch should be. Such feet may be rigid and resist correction, or when weight is not borne the arch may return to a certain extent. But flat-feet are not necessarily painful, and often are very serviceable—a point of some importance just now in the examination of recruits. In a research extending over several years Dr. Lovett examined the condition of 800 nurses' feet on entrance to a large general hospital, and again recorded the condition of those who developed any static disturbance during the three years' training. The nurses worked in day and night shifts in badly ventilated wards, and foot trouble was very frequent. Five or six with perfectly flat feet had no trouble whatever during the three years. On the other hand, one of the first cases that impressed Dr. Lovett occurred in a vigorous young woman with a foot so good that it was photographed as a type. She had so much discomfort from three months' work that she was incapacitated for two months, and finally had to leave on account of her feet. Yet there was no change in the shape of the foot or in its imprint, nor in any of the 800 nurses was a single case of change in the arch of the foot found. In every case the nurse stood for examination on a slab of plate glass with a mirror placed underneath at an angle so as to reflect the weight-bearing areas which appeared as greenish-white patches. These areas were sketched in the record and the amount of pronation noted. In some of the cases when painful symptoms arose the weight-bearing area had shifted slightly inward at the second examination—that is, the foot had rolled over a little over on its inner side without change in the arch, but in many cases there was not even this change. It follows that the static troubles which would ordinarily be described as flat-foot, "pronated foot," "weak foot," &c., are not due to any particular type of foot. Moreover, the pronated foot and the foot with a low arch proved slightly more enduring than the foot with a high arch. The inevitable conclusion, which has been borne out by Dr. Lovett's private experience, is that the pain and disability are due to muscular strain. He suggests

that probably the ligaments become irritated by the failure of the fatigued muscles to support them, and that some degree of synovitis may arise in the tarsal joints. The foot trouble often followed an acute illness. Dr. Lovett regards the wearing of boots, which always to some extent deform the foot, as the predisposing cause. They practically always compress the forefoot and narrow the basis of support. But he considers the chief evil the curve of the sole of the boot which is made as if all feet had a rather low arch. Consequently a fair proportion of the community wear boots which impede the muscular action of the feet and do not compensate for this by supporting the arch of the foot, which is higher than that of the boot. In most cases this does no harm, because the individual is vigorous enough to overcome the disadvantage. From these views the treatment follows. The sole of the boot should have the curve which will support the arch of the foot. In the slighter cases where an obviously bad boot has been worn, it may be possible to get a boot with the requisite arch. More often the arch must be raised higher than this, which is readily done by splitting the leather forming the shank, removing the small piece of iron or stiffening which exists in most boots, and replacing it by a piece of steel with a higher and longer curve. If the foot is too pronated when the patient stands, especially if there are symptoms of strain at the inner side, the inner side of the heel may be made ¼ inch thicker than the outer, thus changing the bearing of the foot towards its outer border.

PROLONGED ANÆSTHESIA.

THE question asked by a correspondent, "Which is the longest period over which an anæsthetic has been known to be given for one operation?" has perhaps not much more than an academic interest. The practical form in which the question of length of possible anæsthesia arises is, "For how long can this particular patient be safely anæsthetised?" This is a problem which is frequently met, and the correct answer may be more confidently expected from an expert anæsthetist than from the physician or surgeon from whom it is generally demanded. It frequently happens that if an anæsthetist is confronted with a case of serious illness requiring operation, and is asked whether an anæsthetic can safely be administered, he has to give a qualified reply, such as "Yes, if the operation will not last more than such and such a time." In cases where the patient's general condition is normal the question of length of time rarely arises as a serious point, for most surgeons nowadays are fully alive to the importance of curtailing the operation period so far as is possible and compatible with care in operating. It is rarely, indeed, that any procedure requires four hours or more for its completion as in the case described by our correspondent. In ordinary work even long abdominal cases rarely exceed three hours, and one anæsthetist of wide experience has never had to administer for longer than three and a half hours for one operation in the whole of his career. The length of time that a patient could actually be kept anæsthetised and still recover would vary, of course, according to the nature of the operation, for it is the combination of operative shock and the effects of the anæsthetic that would be responsible if recovery did not ensue. And here the nature of the anæsthetic comes into the question. The modern methods of combined alkaloids, local analgesics, and general anæsthetics enormously extend the possible duration of safe anæsthesia. Many patients operated on by these methods are anæsthetic for several hours, for long, that is to say, after the operation has been finished. When the narcosis is of only a light degree anæsthesia can be safely maintained over very long periods, even without the aid of local analgesics, and simply by the administration of very diluted chloroform vapour. And probably if obstetric operations are included in our correspondent's query the record will be found to be easily held by a case of this kind. In a difficult confinement case, where it is desirable to postpone instrumental delivery as long as possible, the expert anæsthetist will maintain light narcosis for over six hours, finishing with full surgical anæsthesia during the seventh, and the patient will recover quite well. For experimental purposes animals have been kept continuously under chloroform during more hours than this and on repeated occasions, but this was with no concurrent surgical operation. A story associated with the question of long operations is told of two eminent Scotchmen. The late Sir B. X—— was informed by his anæsthetist, Mr. C——, that the patient, about to undergo laparotomy, was not a good subject for prolonged anæsthesia. "Very well," replied the great man, "but remind me when I've finished just to scrape that patch of lupus on his nose before he comes round." After an hour the patient's condition was poor and the anæsthetist duly drew attention to it. A little later he stated that the condition was serious. Imperturbably the surgeon continued an elaborate anastomosis, until some furious bleeding in connexion with deep-seated adhesions brought the patient to death's door. The anæsthetist now tactfully pointed out that spontaneous respiration had almost ceased. Soon life was extinct, but an elaborate stitching and detailed closing of the abdomen were solemnly executed. Now came Mr. C——'s turn. "You'll not forget, Sir B——, to scrape the corpse's lupus!"

A SPECIAL meeting of the Society of Medical Officers of Health will be held at No. 1, Upper Montague-street, Russell-square, at 5 P.M., to-day, Friday, June 25th, when a discussion will be opened on Thrift in Our Food-supplies, by Dr. H. Meredith Richards, vice-chairman of the National Health Insurance Commissioners of Wales. The meeting and discussion will be open to all persons who are interested in this important question.

THE Cavendish lecture, on the Great Bowel in Health and Disease, by Professor Arthur Keith, will be delivered at the West London Hospital to-night (Friday, June 25th), at 8.15 P.M., and will be followed by the annual conversazione.

THE annual general meeting of the Poor-law Medical Officers' Association of England and Wales will be held on Tuesday, July 6th, at 4 P.M., in the Council Chamber of the British Medical Association, 429, Strand, London, W.C. The presence of all Poor-law medical officers is invited.

Sir Alfred Pearce Gould has been elected Vice-Chancellor of the University of London for the year 1915–16 in succession to Sir Wilmot Herringham.

THE Royal Society of Medicine has conferred on Sir John Williams, Bart., M.D., G.C.V.O., the Honorary Fellowship of the Society.

THE MANUFACTURE OF SALVARSAN PRODUCTS IN ENGLAND AND FRANCE.

A COMMUNICATION was made on behalf of the Medical Research Committee to THE LANCET of April 10th with regard to the nature of the control which the committee, at the request of the Board of Trade, has been exercising during the present emergency over the French and British preparations of salvarsan which are issued for sale in this country. It was then announced that the committee were satisfied that the products tested biologically under their direction were not inferior in safety or in efficacy to the original German preparations. It may be remarked here in addition that satisfactory results of clinical trials, as well as the results of the laboratory tests for toxicity, were in the hands of the committee before the issue of these products was authorised. The preparations in question have now for some months been available for use by the medical profession in this country, and it appears desirable to the committee that they should seek an opportunity of collecting from those who have had and are now having actual experience of the use of these British and French salvarsan products as complete a record as possible of the results of their practical application.

It is well known that many of the incidental results which may follow the administration of salvarsan can at present be only imperfectly explained. A certain proportion of unfavourable results, including some fatal results, is known to have followed the use of the original German products. While some of these have been explained as being due to imperfect precautions with regard to the purity of the water used in the injection, others have been attributable only to a supposed idiosyncrasy of the patient.

In order to appraise the significance of a favourable or of an unfavourable clinical experience found in the use of a particular batch of any given preparation, it is of great importance to have as complete a record as possible of the other cases which may have been treated with the batch in question. Records of this kind, when referred to the scientific workers engaged on behalf of the Medical Research Committee in the biological testing of the products, would allow a study of the closeness of the correlation which may exist between the clinical results on the one hand, and their laboratory results on the other. Such a comparison between the two kinds of experience would allow a determination of the question whether it is desirable to add to, or to modify in any way, the system of controls which has hitherto been applied, and which has followed the lines laid down by the experience of Ehrlich and his co-workers.

The committee venture to urge that members of the medical profession would be performing a service of national importance, in the present emergency, by keeping accurate records of cases in which the new preparations are used, and by placing such records at the disposal of the committee for their private information and guidance. Particular stress must be laid upon the desirability of recording in every case the name of the preparation used and the serial number applied by the manufacturer to the particular batch employed, together with full details as to dosage, the precautions taken to ensure purity of the water used, and finally, the results of the administration, both as regards therapeutic efficacy and the presence or absence of special incidental symptoms.

It is requested that records of this kind may be addressed to the Secretary of the Medical Research Committee, St. Stephen's House, Westminster.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Irish Medical Association.

AT the annual meeting of the Irish Medical Association last summer a resolution was carried directing the council to appoint a committee to make suggestions for the reorganisation of the association. A committee was appointed and presented a scheme to the council in April last. The council adopted the scheme with a few amendments, and articles and by-laws to make it effective were drafted. The chief change suggested was the reduction of the council from about 80 members to less than 50 by the elimination of most of those elected by the body of members as a whole as distinct from those representing branches. It was also proposed to abolish the offices of honorary secretary and honorary treasurer. To make the changes law it was necessary that they should be adopted at two special meetings of the association. At the first of these meetings the new articles of association had been carried and the greater part of the by-laws, when it was discovered that there was not a necessary quorum present for the transaction of business, and the proceedings were rendered useless.

The annual meeting of the association was held on June 16th at the Royal College of Surgeons, under the presidency of Mr. F. W. Kidd. There was a good attendance of members. The annual report of the council stated that the number of members had increased. Nine members had been removed from the list for accepting and persisting in retaining the position of "medical adviser" or "certifier" under the Insurance Act. The statement of accounts showed a credit balance of £465 2*s*. 4*d*. The report referring to the work of the reorganisation committee said that the report to the council of the association, after some amendments, had been referred back to have the articles and by-laws drafted. The secretary informed the meeting of the fiasco of the special general meeting. After some discussion the reorganisation committee was reappointed, and the council was directed to summon special general meetings at convenient dates in the autumn to consider the draft articles and by-laws. Following the adoption of the report of the council there was a desultory discussion with regard to proposed coöperation with the British Medical Association, but no decision was arrived at. The following officers were re-elected: Mr. F. W. Kidd, president; Dr. Leonard Kidd, Mr. James Keating, Mr. J. B. Story, and Dr. J. Geraghty, vice-presidents; Dr. T. Donnelly, honorary secretary; and Dr. H. U. Byrne, honorary treasurer.

After a debate on the question of appointing a committee to collect evidence and report on Poor-law reform, the question was referred to the existing Poor-law subcommittee of the Irish Medical Committee.

The following resolution was passed unanimously:—

This association protests against the appointment of medical advisers or part-time certifiers under the National

Insurance Act, and is of opinion that any medical man accepting and retaining such appointments should not be met professionally by consultants or other medical practitioners.

A Meeting of Medical Delegates.

A meeting of delegates of the medical profession of Ireland was held at the Royal College of Surgeons on June 15th, Mr. R. J. Johnstone being in the chair. Having reconstituted the Irish Medical Committee for another year, the meeting re-affirmed the decision that all medical certificates under the Insurance Act should be issued by the medical attendant of the insured person. A discussion took place with regard to tuberculosis work under the Insurance Act, and it was pointed out that the policy pursued by the Insurance Commissioners of excluding the medical attendant from any share in the administration of the sanatorium benefit prevented the discovery of early cases of the disease. A resolution was passed demanding that medical referees under the Insurance Act should notify the patient's medical attendant of the day and hour of a proposed visit to an insured person. Discussion also took place with reference to professional relations with "medical advisers," and it was held that no medical man should enter into consultation or other professional relation with an "adviser."

Royal Medical Benevolent Fund of Ireland.

The annual meeting of the Royal Medical Benevolent Fund Society was held on June 16th in the Royal College of Physicians. Sir John Moore read the annual report, which stated that the number of applicants during the year had been up to the average, but the aid given was far short of their requirements. The receipts had fallen considerably, and it had been necessary to recommend the curtailment of some of the grants. The total number of applications considered was 85; of these, 76 were from widows of medical men, six from or on behalf of orphans, and three from medical men themselves. The total amount of the grants recommended since last distribution was £1138. The honorary treasurer, Sir Stewart Woodhouse, read the treasurer's report. Including a balance of £476 6*s.* 8*d.* brought forward from the preceding year, the income of the society for the year ended April 30th was £1991 11*s.* 3*d.*, a decrease of £180 7*s.* 1*d.* This decrease was doubtless owing to the pressing claims of the war now in progress upon the subscribers. On the credit side of the account the disbursements were £1461 3*s.* 8*d.*—viz., grants, £1347; miscellaneous payments, £114 3*s.* 8*d.*

The Royal College of Surgeons in Ireland and a Proposed Boycott.

The secretary to the Council of the Royal College of Surgeons in Ireland has distributed to the Fellows and Licentiates of that body copies of a correspondence which has recently passed between the Council and one of the Fellows. Mr. A., a Fellow, asked for an expression of opinion of the Council as to what his attitude and conduct should be in the following circumstances: His colleague, Mr. B., had accepted a "medical adviserships" under the National Insurance Commissioners, thereby violating an agreement by which he had bound himself, as did the great majority of medical men in Ireland, not to accept any such office without the approval of the local medical committee, and then only if the conditions were in accordance with the declared policy of the Irish Medical Association. Consequent on Mr. B.'s accepting this office a meeting of the medical practitioners of the county had been held, and Mr. A. stated that he had been warned that unless he consented to boycott Mr. B. he would himself be subjected to boycott. He asked the Council for guidance. In reply, the Council states that unless Mr. B. can prove that he signed the undertaking under a misapprehension as to its scope and meaning, his violation of his written undertaking calls for the severest condemnation. As to a proposed boycott of Mr. B., the President and Council could not express any approval of such action. The letter severely condemns the action of any medical man who interferes in a professional capacity with the patients of other medical men, and by promising that the Council will deal severely with this offence, if proven, the communication will be of considerable assistance to the medical profession.

Belfast Water-supply.

The water in store in the Belfast reservoirs amounts at present to 1957 million gallons, which is 63 million gallons less than the storage on the corresponding date of last year. On a similar date in the dry year of 1911 the quantity available was 1811 million gallons. It appears that not only has the proposed reservoir in the Silent Valley of the Mourne Mountains not been begun, but that even if it were commenced it would not be completed for seven years; in the meantime people are in dread that, as before, Belfast will be placed on an intermittent supply. At a meeting of the Water Board, held on June 17th, the chairman quietly announced that, as soon as the war was over, the Board hoped something would be done. The Commissioners' inactivity was sharply condemned by certain members of the Board.

The King Edward Memorial Building, Belfast.

This memorial building, which will serve as an adjunct to the Royal Victoria Hospital, was opened recently by His Excellency the Lord Lieutenant of Ireland. The building owes its inception and erection to Lady Pirrie, who, as Lady Mayoress of Belfast in 1896, was instrumental in raising a sum of £100,000, to which she and Lord Pirrie contributed very handsome sums, and also raised a further sum of £48,000 as an endowment fund. Mr. J. Milne Barbour, D.L., said that in anticipation of the great demands which would probably be made in the near future on hospital accommodation for the treatment of sailors and soldiers wounded while fighting for their country, it had been decided to place the new building at the disposal of the hospital authorities at the earliest opportunity. Sir John Byers, chairman of the medical staff of the Royal Victoria Hospital, said that when the building was fully furnished the medical staff would be provided with some of the most recent practical adaptations of those sciences that were ancillary to medicine for the diagnosis and treatment of disease, and he hoped that the building would witness discoveries which would advance our knowledge in medicine and surgery. He pointed out the important work which would be carried on in the departments of vaccine therapy, electricity, and biochemistry under the direction respectively of Dr. T. Houston, Dr. J. C. Rankin, and Dr. J. E. MacIlwaine, and concluded by saying that without such institutes as that in which they were assembled those discoveries would never have been made by which our sailors and soldiers had been kept in a healthy and fit state and had been preserved from such diseases as typhoid fever, dysentery, and lockjaw.

June 21st.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

MACHINERY FOR DISTRIBUTION OF FUNDS IN BELGIUM.

WE have now received the detailed report of the session of the Aide et Protection aux Mèdecins et Pharmaciens Belges Sinistrés on May 6th, which continues the story of the distribution of funds by the Belgian Society. A financial statement showed that by the end of April 65,000 francs had been received and a little over 45,000 francs had been spent, great discretion having been obviously exercised in making the grants. The kind of case relieved has been fully illustrated already.

At this session the cases were mentioned which had already been found deserving of continued monthly relief, in accordance with the principle adopted at the last session, and the brief notes upon the selected objects of special help reveal some truly tragic situations. All the grants of money proposed by the eleemosynary subcommittee were unanimously adopted by the committee.

We have received through Professor Jacobs a statement of the financial position of the Belgian Society up to June 10th, which shows that the funds are still lasting out, but necessarily the disbursements are rapidly increasing. The Aide et Protection aux Médecins et Pharmaciens Sinistrés had received by the end of the first week in June 77,000 francs, and had disbursed 60,000 francs, while the extraordinarily modest expenses of administration amounted to less than 500 francs.

Since this date a substantial sum of money has been sent by the British Committee to the Belgian Committee, so that Dr. V. Péchère (president) and his admirable colleagues, M. A. Delacre, Dr. Laruelle (secretaries), and Dr. H. Coppez (treasurer) will be able to continue with good heart to meet the increased calls upon their resources.

THE WEEK'S SUBSCRIPTIONS.

The week's subscriptions include the handsome contribution from the New South Wales Branch, B.M.A., of £500, making with previous donations a total of £728 received from this generous source.

	£	s.	d.
Dumfries and Galloway Division, B. M. A. (per Dr. J. D. Robson, Hon. Sec.)—			
Dr. Robertson	0	10	0
Dr. H. Bryan Densham	5	5	0
Dr. A. G. Peter	2	2	0
Birmingham Local Committee (per Dr. Saundby, Hon Sec)—			
Dr. A. E. Richardson	5	5	0
Aberdeen Division, B.M.A.—			
Drs Pirie, A.H.Lister, J. F. Christie, Croll, M. K. Booth, F. K. Smith, Alex Low, John A. Milne, Col. Mitchell, Drs. Gordon, Levack, Geddie, Stephen, Davidson, Smith, Slessor, J. P. Mitchell	28	0	0
Dr. Mary O'Brien	1	1	0
Dr. G. D. H. Carpenter	1	0	0
New South Wales Branch B.M.A.	500	0	0
North of England Branch of Fund (per Dr. James Don and Mr. A. S. Perceval, Hon. Secs.) (fifteenth donation, total £728 19s. 7d.)—			
Dr. J. J. Carruthers...	1	1	0
Dr. D. S. Park	1	1	0
Dr. F. Hunton	1	1	0
Dr. W. J. Carmichael	2	2	0
Mr. A. Williams	1	1	0
Mr. A. Mortimer	0	10	6
M. P. S.	0	3	0

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham-gate, London, S.W., and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Ltd.

THE APPEAL FOR SURGICAL INSTRUMENTS.

The Master of the Society of Apothecaries begs to acknowledge the receipt of surgical instruments kindly contributed by the following donors since the publication of the last list:—

Dr. Gordon Brown, Chigwell, Essex; Barnsley Division of the B.M.A., second donation, per Dr. R. F. Castle.

Instruments should be sent to the Apothecaries Hall, Blackfriars, E.C.

THE NATIONAL INSURANCE ACT.

London Panel Committee: War Emergencies and Local Coöperation.

THE London Panel Committee on June 22nd discussed the formation of local associations of practitioners on the panel. It was urged by the General Purposes Committee that such bodies would be of great value in dealing with problems peculiar to localities, in removing local grievances, and in preserving the interests of practitioners on the panel. In each area coöperative arrangements might be made for weekly and periodical holidays; rotas of medical referees might be appointed to advise in difficult or doubtful cases; in districts in which sickness incidence was heavy practitioners might encourage the provision of lectures on health and work for sanitary reforms tending to benefit health. Negotiations with hospitals and arrangements for specialist consultations might sometimes be better carried out by a local association. The committee passed a resolution expressing the opinion that practitioners on the panel in the various areas of London should be grouped under district panel associations.

A statement was submitted showing that the number of practitioners on the panel resident in London was 1550, of whom 457 were registered since 1900, and presumably were eligible for service with the Forces. The number of practitioners on the panel at present absent on military duty was 125. The General Purposes Subcommittee had pointed out that it would appear that only about one-quarter of the eligible practitioners were actually serving with the Forces, and that the difficulty was a fear that on returning practitioners would find their practices much depleted by reason of the transference of insured persons to other lists. The Panel Committee passed a series of resolutions expressing the opinions that:—

1. The right of an insured person to transfer should be temporarily suspended.
2. That practitioners on the panel should collectively arrange to release an adequate proportion of their number for service with the Forces.
3. That in the event of a colleague accepting a commission the practitioners undertaking the treatment of the persons on the list should, in normal circumstances, permit the colleague to retain 50 per cent. of the income from the insurance practice.

A detailed scheme embodying these resolutions was also approved.

The Local Medical and Panel Committees and the War.

At the conference of representatives of Local Medical and Panel Committees convened by the British Medical Association on June 16th the number of motions placed on the agenda with regard to insured persons who may be discharged from the services incapacitated for work showed the serious apprehension felt by medical men on the panels as to their future position and the effect likely to be produced upon it by the war. The original motion to consider the questions arising having been assigned to the chairman, those set down by various Local Medical and Panel Committees dealt with various aspects of the case and suggested remedies. From Liverpool came the proposal that Parliament should make some grant to practitioners on the panels to compensate them for the serious charge likely to be imposed upon them by the return of many of their "best lives" as broken and disabled men. The Croydon Committee asked for an increased capitation fee in respect of such patients, the Nottingham Committee suggesting, as an alternative for a higher rate of remuneration, payment for work done, "in view of the fact that circumstances have arisen which were not contemplated when the existing terms were arranged." The Northumberland Panel Committee, by the terms of its motion, protested against the direction contained in Memo. 210 I.C., making insured persons returning to civil life free to select their method of obtaining medical treatment as though newly entering upon insurance. This, it was pointed out, would tend to increase the number of unallotted patients. The approval of the Insurance Act Committee of the British Medical Association had already been given to an arrangement for the reinstatement of the insured person to the list of the medical man attending him before his enlistment, subject to the right of the insured person to change his medical attendant, and to that of the medical man to refuse to reaccept the insured person.

The New Certification System.

One of the most interesting of the documents circulated among the representatives of Local Medical and Panel Committees with a view to the conference contained information as to the attitude of the Approved Societies with regard to the certification of chronic cases. A letter had been sent to the societies calling attention to the way in which the subject is treated in Memo. 211 of the Insurance Commissioners, and to the hardship, accentuated by the stress of war conditions, needlessly caused by the requirement of weekly certificates. To this letter 45 replies had been received, of which 31 intimated that weekly certificates were considered by the societies affected to be unnecessary, or were likely to be declared so. Nine societies merely acknowledged the letter or stated that it would receive consideration. Five replies were of an unfavourable character, but in some of these cases further correspondence appeared to be likely to obtain the concessions asked for. On the whole, therefore, the societies may fairly be said to take a reasonable view of the matter, in which they are not asked to sacrifice any principle of importance affecting either their own interests or the personal interests of their members.

The Panel Medico-Political Union.

At the recent annual general meeting of the Panel Medico-Political Union, now entering the second year of its existence, the result of the elections of officers and council for the coming 12 months was made public. Among those re-elected was the chairman, Dr. W. Coode Adams, the other officers chosen being: Vice-Presidents, Mr. J. A. Angus, Dr. H. J. Cardale, Dr. H. G. Cowie, and Mr. R. J. Farman; treasurer, Dr. G. R. Young; trustees, Dr. W. Coode Adams, Dr. G. B. Batten, and Mr. F. H. Lane. In addition to these, 30 names of practitioners chosen to be members of the council were announced. In his address the President dwelt upon the intention of the Union to exercise political influence on behalf of members of the panels and to obtain the support of members of the House of Commons by exercising such influence on their behalf, or the reverse, in their constituencies. Among objects aimed at would be the obtaining of better representation upon Insurance Committees for panel practitioners, and also more direct representation for insured persons. The holding back of money due by the action of suspense slips was a grievance to which special and immediate attention would be directed, as well as the question of insured persons returning from the war invalided.

Coventry Insurance Committee.

The Coventry Insurance Committee at a recent meeting considered the question of surcharges made by the Treasury auditor in respect of expenditure incurred through representatives of the committee attending certain conferences connected with insurance matters. A resolution in terms recommended by the finance subcommittee was passed protesting against the surcharges, and representing that the expenditure disallowed was reasonable and necessary to the carrying out of the committee's work, there being, moreover, no statutory delimitation of the expenses which might rightly be incurred. It was argued in the course of the discussion that it was of the utmost importance to the committee that it should be in touch with other insurance committees, and that this object was attainable only through taking part in the conferences referred to. Important criticism of the financial provisions of the Insurance Acts for the treatment of tuberculosis took place at the same meeting. It was pointed out that in the provision of treatment, institutional and domiciliary, expenditure was being incurred and undertaken at Coventry which could not safely be continued, a medical member of the committee expressing the opinion that the situation arose through no fault of the committee, "for at the beginning of the Act people were promised all sorts of benefits, which, however, had been shown to be quite impossible." The speaker submitted that the only solution of the difficulty would be the provision of money by the Treasury on a much larger scale. Under the Act the amount of consumption and the extent of the curative measures necessary had been very much under-estimated. The chairman, in making observations to a similar effect, argued that the whole basis of the scheme was wrong. With reference to suggestions made that the prevention of consumption by sanitary measures would be found more effective than attempts to cure it, he was of the opinion that before this could be done the amendment of several Acts of Parliament besides the Insurance Acts would be required. The fact remained, he said, that the work of the sanatorium benefit subcommittee had reached such a stage in its development that the subcommittee could not keep on under existing conditions, and he wanted the insured public to understand that the Insurance Committee had no desire to limit the rights of any insured person, but that it was bound, having regard to its commitments, to adopt a different attitude.

MEDICINE AND THE LAW.

Modern Echoes of a Famous Crime: the Trial of the Stauntons.

NEARLY 40 years ago, in September, 1877, four persons, Louis and Patrick Staunton, Elizabeth, wife of Patrick Staunton, and Alice Rhodes, her sister, were convicted at the Old Bailey for the murder of Harriet, wife of Louis Staunton, and were sentenced to death by Mr. Justice Hawkins, who, according to such public opinion as found immediate expression, had brought to a successful issue the first trial for murder conducted by him. The capital sentences, however, were not carried out, a result largely due to the efforts of the medical profession and of THE LANCET. The case and its history have recently received prominent notice in the *Cornhill* from the pen of Sir Edward Clarke, who defended Patrick Staunton, and who in his résumé of the trial made criticisms of a severe character upon the late Lord Brampton, better known as Mr. Justice Hawkins. We are not here concerned with the views expressed by one of the most able and eloquent advocates of the last generation upon a judge who, whatever his demerits, had many shining qualities, but we did at the time of the "Penge mystery" interest ourselves considerably in the fate of the Stauntons and Alice Rhodes, and in securing for the medical evidence given on their behalf the recognition which the judge had denied to it.

These things contributed not a little to saving from the gallows four persons, who by whatever acts of cruelty and immorality they might severally have deserved public execration, certainly had not murdered Harriet Staunton by starving her to death, the only way in which they were accused of committing the crime charged against them. Whatever opinions leaders of the Bar may have held of Mr. Justice Hawkins during his long career as a judge in civil or in criminal cases, of his fairness or unfairness, of his clemency or the reverse, he undoubtedly made a very ill-advised effort to secure conviction for the capital crime in a case in which the medical evidence was of supreme importance and in which medical evidence of the highest quality was opposed to the conclusion at which he desired the jury to arrive. In order to do this he was compelled to belittle the expert evidence called for the defence, and he virtually ignored it. He practically omitted from his summing-up all appreciation of the testimony of Dr. J. S. Bristowe and Dr. J. F. Payne, respectively a most wise physician and a most careful pathologist, and alike scrupulously careful observers; and he accordingly obtained a verdict which the medical profession immediately recognised as being contrary to justice. The whole of the squalid story of the Staunton case has been admirably compiled by the late Mr. J. B. Atlay.[1] Harriet Staunton was treated in different degrees by the four persons named in the indictment with abominable neglect and cruelty, but, as THE LANCET of Oct. 6th, 1877, put it in a leading article commenting upon the trial: "It must obviously be impossible to prove murder by starvation without first showing death by starvation." As we then stated, holding an opinion from which we see no reason to depart, the attempt to affirm the primary proposition failed. The post-mortem appearances were not consistent with the hypothesis of death from the cause assigned. They afforded irresistible evidence of other factors at work, although it was not, owing to the defective manner in which the body was examined, possible to say which of several morbid conditions proved fatal to life.

[1] Trial of the Stauntons. Edited by J. B. Atlay, Barrister-at-law. Wm. Hodge and Co.

We do not suggest that the verdict actually arrived at by the jury was unsupported by medical evidence entitled to due consideration. Several medical practitioners of standing, two of whom were called as experts, supported the view that starvation caused the death of Harriet Staunton, but the ignored scientific evidence was beyond question better qualified to command attention than that which secured the adverse verdict, and the fact that Dr. Bristowe and Dr. Payne had not seen the deceased in life, or her body after death, did not materially discount the value of their opinions, as the judge in his brief reference to their evidence suggested.

Expert witnesses as a rule rely upon the facts described by others in forming their opinions, and if the observers are qualified by training the expert's opinion rests upon a satisfactory foundation. In this instance the value of the medical evidence for the defence might have been said to have gained, rather than to have lost, by its dependence upon that adduced by the Crown. Those who gave it accepted the sworn statements of witnesses for the Crown as to what they had seen or had failed to observe, but drew the scientific deductions. Perusal of the evidence many years after, indeed, suggests that in his later years the same judge would probably have taken a different course, either devoting more time to criticising and weighing the evidence of Mr. Payne and Dr. Bristowe even if only to endeavour to demolish it, or recognising its force in preventing the establishment of the case for the Crown "beyond any reasonable doubt." He must also have been aware that he had shut out upon technical grounds the evidence for the defence of a very highly qualified witness, although he may have assumed that he with the others would be reduced to permanent silence by the jury's verdict.

A repetition of that which occurred in 1877, when the four prisoners solemnly condemned to death for Harriet Staunton's alleged murder were reprieved almost immediately, is not likely to occur now. It might do so, of course, but the progress of science, protecting human life in many ways, has added certainty to the results of medical investigation into causes of death and similar matters, and, with greater sureness that the truth will have been arrived at, weight is given with greater confidence to the best medical evidence by judge and jury alike. We need only refer to the trials of the murderers Crippen and Seddon in order to remind ourselves of the public confidence in the establishment of justice by medical evidence in cases where the material facts are incomprehensible so far as the general public is concerned. There was a perceptible agitation for reprieve in each of these cases, but it rightly came to nothing.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE undermentioned have been granted temporary commissions as Surgeons in His Majesty's Fleet:—Dated June 16th: William Lovell and Charles Stuart Ogilvy. Dated June 17th: Edwin John Tongue.

ARMY MEDICAL SERVICE.

Major Sir Berkeley G. A. Moynihan, R.A.M.C. (T.), to be temporary Lieutenant-Colonel (dated June 10th).

ROYAL ARMY MEDICAL CORPS.

Captain William McConaghy is seconded for service with the Egyptian Army (dated June 5th).

Temporary Captain Sydney G. L. Catchlove relinquishes his commission (dated June 11th).

Temporary Lieutenant Thomas M. Watt relinquishes his commission (dated March 1st).

The undermentioned to be temporary Majors:—Dated May 27th: Alexander Johnstone. Dated June 7th: George Harry Melville Dunlop and Henry Alexis Thomson.

The undermentioned to be temporary Captains:—Dated May 1st: Arthur George Whitehorne-Cole. Dated May 22nd: Walter Sydney Lazarue-Barlow.

The undermentioned non-commissioned officers and men of the Canadian Army Medical Corps to be temporary Lieutenants:—Dated May 26th: Sergeants Robert Beattie Martin, Harry Roy Smith, Paul Michael O'Sullivan, Louis Edwin Williams, David Edmund Staunton Wishart, and Gerald Allison; Corporals Clifford M. Keiller, David Emerson Scott, and Stanley Stafford Ball; Lance-Corporals Herbert Carl Martin and Thomas Harold Douglas Storms; Privates Thomas Daily Cumberland, Donald Thomas Fraser, Richard Collier Coatsworth, Harry Karl Groff, Louis Emile Belcourt, Morley Edward Gorman, Maurice Round Helliwell, Thomas Harold Crews, William Ray Hodge, Harold Parrish Hamilton, Frederick Walter Clement, Athol Alexander Moon, Stanley Young Walsh, Arthur McKnight Bell.

The undermentioned to be temporary Lieutenants:—Dated April 14th: Harold Robert Dew, Robert Kenneth Birnie, Jack Morlet, Albert Weigall, George Clifford Scantlebury, James Garnet Sleeman, William Alfred Leslie Harrison Henderson, Albert Wilber Bretherton, Cyril Checchi, Frank William Augustus Ponsford, Walter Cecil Marsden, Thomas Edwin George, Alfred John Trinca, Raymond William Ryan, Nigel Lovat Prichard, William Arthur Bowman, William Alexander Hamilton Birrell, William Rogerson, Wilberforce Stephen Newton, and George Chadwell Bury. Dated April 20th: Francis William Stone, Frank Harold Looney, Arthur Ernest Stenning, Michael Harold Sorokiewich, Robert Welton Hogg, Johnston Hughston, Charles Humphrey Lloyd, Cecil Gordon McAdam, and Roy Baldwin Minnett. Dated May 1st: William Moore Skipwith Robinson. Dated May 10th: John Joseph Middleton. Dated May 13th: Dominick John Cannon. Dated May 20th: Samuel Lloyd Corry, Malcolm Macnicol, Percy Templeton, Edgar Roe Lyth, Stephen Galt Trail, Frank Melville Harvey, and Tudor Benson Evans. Dated May 21st: Ellis Gordon Goldie, James Murray Duff Mitchell, George Peter Taylor, Edmond Ryan, John Charles Michell, John Low, Edward Beresford Collings, Albert Edward Blackburn, Francis Anderson, John Anderson, James Montgomery Anderson, Edward Scott White, Thomas Trevor Apsimon, Maurice Aloysius Power, Henry Glendinning Davison, John Clark, William O'Brien, Thomas Kirkwood, Allen Edgar Thompson, Augustus Beauchamp Northcote, James Samuel Richard Weir, Robert Charles De Lacey, Henry Richard Hurry, and Claude Robinson Lucas. Dated May 22nd: Frederic William Waudby Griffin, Alexander Newton Clemenger, Daniel Charles Evans, and Herbert Frank Willington. Dated May 24th: Israel Allaun, James Lawson Williams, William Henry Warwick, Roy Darley Clayton, Gerald Henry Davy, Frank Ernest Reynolds, and Charles Brehmer Heald. Dated May 25th: James Cunningham, Lancelot Gordon McCune, Bernard Geoffrey Klein, James Davidson MacKay, Henry Donald Welply, William Taylor Buchan, Ernest Coleman, Robert James Allsopp, John Gordon Smith Macpherson, John Proctor, Donald McIntyre, David Charles Welsh, Arthur Leslie Walters, William Ledingham Christie, John Lyn Dimond, Dan Arthur Powell, Arthur Edward Clarke, Robert Hugh Drennan, Wilfred Angel Easton, Arthur Noel Houghton, Herbert Playford Sheppard, Raymond Alexander Hannay Atkinson, Allan Massey, William Rice Meredith, Francis Joseph Sadler, Spencer Churchill, and Douglas Allan. Dated May 26th: Watts Edmondson, Charles Salkeld, Arthur John Clayton, John Koble Milne Dickie, Hew William Scott-Wilson, and Arthur Geoffrey Shera. Dated May 27th: Arthur Edward Lyster, James Lochhead Gregory, Lester Ernest Ashley Emile, William Minty Badenoch, Richard Nunn, Sidney Winslow Woollett, Thomas Hutchinson, Andrew Philip, Nelson West Jenkin, Adam Brown, Arthur James Lewis, Hugh James McCurrick, Charles Samuel Woodd, William Edward Nickolls Dunn, Patrick Aloysius Doyle, Kirsop Bainbridge James Vickers, George Brown Crawford, David Fettes Barron Norman Sinclair, James Leslie Callaghan, and William Hunter Brown. Dated May 28th: Arthur Hill Laird, Malcolm Mauson, Harold Willis Scawin, Robert Scott, Mark O'Brien, Kenneth Fraser, Leslie Gordon Tait, George Kirkwood Allan, James Henderson Yule, John Alexander Mortimer, William Duncan Lawrie, William Sibbald Campbell, Norman Alexander Aylmer Hughes, Douglas Craig, Percy Charles Garrett, Leslie Wilson Evans, Reginald Norman Porritt, David Watt Torrance, Reginald Inglis Douglas, John Barron Scott, and James Finlay Alexander. Dated May 29th: Thomas Joseph Lydon, Frederick William Campbell, Andrew Louis Krogh, and Paul Ransome Browning. Dated May 31st: William Johnson Symes, Robert Brookes, and Michael Abdy Collins. Dated June 5th: Lieutenant Fraser Baillie Gurd, Canadian Army Medical Corps.

Frederick Hall to be temporary honorary Lieutenant whilst serving with the St. John Ambulance Brigade Hospital (dated June 10th).

Ralph Marsh de Mowbray to be temporary Lieutenant whilst serving with the British Red Cross Hospital, Netley (dated April 27th).

Arthur Conyears Inman is granted temporarily the honorary rank of Lieutenant (dated June 14th).

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

The undermentioned Lieutenants (on probation) are confirmed in their rank:—Frank H. Kennedy, Norman B. Graham, James Lawson, Francis L. P. G. Bennett, Geoffrey B. Egerton, and Patrick A. Clements.

John Galloway Hendry (late Cadet Lance-Corporal, Glasgow University Contingent, Officers Training Corps) to be Lieutenant (on probation) (dated May 8th).

William McElrea Snodgrass (late Cadet Lance-Corporal, Dublin University Contingent, Officers Training Corps) to be Lieutenant (on probation) (dated May 30th).

TERRITORIAL FORCE.

Army Medical Service.

Major Ernest C. Freeman, Reserve of Officers, from Deputy Assistant Director of Medical Services, to be Assistant Director of Medical Services, East Anglian Division, with the rank of Colonel.

Lieutenant-Colonel David L. Hamilton, from 2nd Home Counties Field Ambulance, to be Deputy Assistant Director of Medical Services, Home Counties Division.

Royal Army Medical Corps.

Captain Charles A. Ballance, M.V.O., is seconded whilst holding a temporary commission in the Royal Army Medical Corps.

Captain John M. Fortescue-Brickdale is seconded for service with the Expeditionary Force.

3rd North Midland Field Ambulance: Lieutenant Crichton S. Lee is restored to the establishment.

4th London General Hospital: Captain Thomas C. English is seconded for service with the Expeditionary Force.

1st Northern General Hospital: James Ackworth Menzies to be Lieutenant.

2nd Northern General Hospital: Major James A. Coupland is seconded for service with the Expeditionary Force.

4th Northern General Hospital: Captain Frederick E. Withers is seconded for service with the Expeditionary Force.

2nd Southern General Hospital: Captain Ernest W. H. Groves is seconded for service with the Expeditionary Force.

Scottish Horse Mounted Brigade Field Ambulance: James Alexander Mathers (late Lieutenant, Scottish Horse Yeomanry) to be Captain (temporary).

2nd South Western Mounted Brigade Field Ambulance: John Hamilton Cumming to be Lieutenant.

2nd East Anglian Field Ambulance: Saville James Fielding to be Lieutenant.

2nd Northumbrian Field Ambulance: Christopher Rogers to be Lieutenant.

2nd Eastern General Hospital: Ernest Fryer Ballard to be Lieutenant.

2nd Home Counties Field Ambulance: Benjamin Allen Bull to be Lieutenant.

2nd London (City of London) General Hospital: Major Charters J. Symonds is seconded whilst holding a temporary commission in the Royal Army Medical Corps.

3rd Northumbrian Field Ambulance: John Gray (late Major, 6th Battalion, The Durham Light Infantry) to be Major (temporary).

Welsh Divisional Sanitary Section: Captain Robert Proudfoot, from Sanitary Service, to be Captain.

East Anglian Casualty Clearing Station: Major John H. Dauber to be Lieutenant-Colonel. Lieutenant Frederick W. Lewis (late Surgeon-Captain, South African Constabulary) to be temporary Captain.

1st East Anglian Field Ambulance: Captain William D. Watson, from Attached to Units other than Medical Units, to be Captain (temporary).

3rd Highland Field Ambulance: Lieutenant Edwin A. Bell resigns his commission.

3rd East Lancashire Field Ambulance: Wilfred Edwin Rothwell to be Lieutenant.

2nd West Lancashire Field Ambulance: William Francis Young to be Lieutenant.

1st Southern General Hospital: William Kirkpatrick to be Major, whose services will be available on mobilisation.

3rd Southern General Hospital: Captain Arthur G. Kewley, from 1st North Midland Field Ambulance, to be Captain, whose services will be available on mobilisation.

2nd Western General Hospital: Frank Chadwick to be Lieutenant.

Sanitary Service: Captain Alexander C. Farquharson, from Attached to Units other than Medical Units, to be Sanitary Officer, Northumbrian (Reserve) Division.

East Anglian Divisional Sanitary Section: Walter Francis Corfield (late Captain, 2nd London Sanitary Company) to be Captain.

West Lancashire Casualty Clearing Station: Cadet Theodore Howard Somervell, from University of London Contingent, Senior Division, Officers Training Corps, to be Lieutenant.

Attached to Units other than Medical Units.—Major Percival E. Barber is seconded for service with the R.A.M.C. To be Captains: Captain Lawder T. Whelan, from Sanitary Service, George Raymond (late Captain, 8th (Isle of Wight Rifles, "Princess Beatrice's") Battalion, The Hampshire Regiment), and Lieutenant Robert L. Routledge.

TERRITORIAL FORCE RESERVE.

Royal Army Medical Corps.

Colonel John R. I. Raywood (late Assistant Director of Medical Services, South Midland Division) to be Colonel.

VITAL STATISTICS.

VITAL STATISTICS OF LONDON DURING MAY, 1915.

IN the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the 10 diseases specified in the table was equal to an annual rate of 6·4 per 1000 of the population, estimated at 4,516,612 persons; in the three preceding months the rates were 7·4, 6·6, and 6·3 per 1000 respectively. The lowest rates last month were recorded in Hampstead, Stoke Newington, Bermondsey, Camberwell, and Lewisham; and the highest rates in Paddington, the City of Westminster, St. Marylebone, Stepney, Southwark, and Woolwich. One case of small-pox, which belonged to Stepney, was notified during the month. The prevalence of scarlet fever showed a slight increase as compared with the two preceding months; among the metropolitan boroughs this disease was proportionally most prevalent last month in Hammersmith, the City of Westminster, St. Marylebone, Finsbury, Stepney, and Woolwich. The Metropolitan Asylums Hospitals contained 2221 scarlet fever patients at the end of last month, against 2989, 2514, and 2339 at the end of the three preceding months; the weekly admissions averaged 283, against 324, 278, and 272 in the three preceding months. Diphtheria was less prevalent than it had been in any other recent month; the greatest proportional prevalence of this disease was recorded in St. Pancras, the City of London, Bethnal Green, Stepney, and Poplar. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1562, 1362, and 1223 at the end of the three preceding months, had further declined to 1083 at the end of last month; the weekly admissions averaged 128, against 172, 142, and 136 in the three preceding months. The prevalence of enteric fever showed a marked decline last month; the 40 notified cases of this disease included 6 in Hackney, 4 each in St. Pancras, Bethnal Green, Lambeth, and Deptford, and 3 each in Stepney, Bermondsey, and Camberwell. The Metropolitan Asylums Hospitals contained 49 enteric fever patients at the end of last month, against 64, 46, and 60 at the end of the three preceding months; the weekly admissions averaged 6, against 13, 8, and 13 in the three preceding months. Erysipelas was proportionally most prevalent in Paddington, Shoreditch, Bethnal Green, Southwark, and Woolwich. The 32 cases of puerperal fever notified during the month included 4 each in Kensington and Southwark, 3 in Wandsworth, and 2 each in Chelsea, St. Pancras, Islington, Stepney, Lambeth, and Camberwell. The 87 cases of cerebro-spinal meningitis included 9 in Wandsworth, 8 in Kensington, 7 in Hammersmith, 6 in Shoreditch, and 5 each in Stepney, Battersea, and Camberwell. The 6 cases of poliomyelitis belonged respectively to Hampstead, St. Pancras, Islington, Bethnal Green, Wandsworth, and Woolwich.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided; the death-rates from all causes are further corrected for variations in the sex and age constitutions of the several boroughs. During the four weeks ending May 29th the deaths of 5065 London residents were registered, equal to an annual rate of 14·6 per 1000; in the three preceding months the rates were 20·7, 21·2, and 19·6 per 1000 respectively. The death-rates last month ranged from 10·9 in Woolwich, 11·1 in Wandsworth, 11·3 in Paddington, 11·5 in Lewisham, and 11·7 in Hampstead, to 16·5 in Bethnal Green, 16·6 in Finsbury, 16·8 in Battersea, 18·2 in Shoreditch, 18·6 in Chelsea, 19·7 in Bermondsey, and 23·1 in the City of London. The 5065 deaths from all causes included 537 which were referred to the principal infectious diseases; of these, 269 resulted from measles, 20 from scarlet fever, 41 from diphtheria, 137 from whooping-cough, 10 from enteric fever, and 60 among children under 2 years of age from diarrhœa and enteritis. The lowest death-rates from these diseases in the aggregate were recorded in Kensington, Westminster, Hampstead, the City of London, Stepney, Lambeth, and Camberwell; and the highest rates in Chelsea, Islington, Shoreditch, Bethnal Green, Poplar, Bermondsey, and Battersea. The 269 deaths from measles were 119 in excess of the corrected average number; this disease was proportionally most fatal last month in Chelsea, Islington, Shoreditch, Bethnal Green, Poplar, Bermondsey, and Battersea. The 20 fatal cases of scarlet fever were 4 in excess of the average, and included 3 in Fulham, 3 in Islington, and 2 each in Hammersmith and Southwark. The 41 deaths from diphtheria

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING MAY, 1915.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated population in the middle of 1914.	NOTIFIED CASES OF INFECTIOUS DISEASE.												DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.									Deaths from all causes.	Death-rate per 1000 living.†
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON...	4,516,612	1	1214	544	1	40	—	32	288	87	6	2213	6·4	—	269	20	41	137	10	60	537	1·5	5065	14·6
West Districts.																								
Paddington	142,055	—	47	20	—	—	—	—	17	2	—	86	7·9	—	4	1	1	3	—	3	12	1·1	124	11·3
Kensington	170,817	—	36	15	—	2	—	4	8	8	—	73	5·6	—	7	1	1	1	—	2	12	0·9	186	14·1
Hammersmith	124,750	—	41	14	—	—	—	—	4	7	—	66	6·9	—	3	2	3	—	—	3	11	1·1	146	15·1
Fulham	158,849	—	45	16	—	—	—	1	9	3	—	74	6·1	—	13	3	2	7	—	1	26	2·1	156	13·2
Chelsea	63,791	—	14	8	—	—	—	2	4	—	—	28	5·7	—	16	1	—	—	—	—	17	3·5	96	18·6
City of Westminster	152,346	—	71	19	—	—	—	—	5	3	—	98	8·4	—	4	—	1	1	—	2	8	0·7	152	13·7
North Districts.																								
St. Marylebone	112,892	—	43	14	—	—	—	—	9	1	—	67	7·7	—	6	—	—	3	—	—	9	1·0	109	12·8
Hampstead	86,731	—	14	7	—	—	—	—	2	2	1	26	3·9	—	1	—	—	1	—	—	2	0·3	74	11·7
St. Pancras	212,497	—	53	38	—	4	—	2	13	4	1	115	7·1	—	14	—	1	9	—	5	29	1·8	229	14·0
Islington	324,764	—	94	34	—	—	—	2	8	4	1	143	5·7	—	31	3	3	16	—	7	60	2·4	402	15·7
Stoke Newington	50,454	—	9	2	—	—	—	—	2	2	—	15	3·9	—	2	—	—	1	—	1	4	1·0	54	13·3
Hackney	223,724	—	51	21	—	6	—	—	17	2	—	97	5·7	—	3	—	1	12	4	4	24	1·4	252	14·8
Central Districts.																								
Holborn	45,861	—	12	1	—	1	—	—	1	3	—	18	5·1	—	2	—	—	2	1	—	5	1·4	51	14·5
Finsbury	83,212	—	34	6	—	—	—	1	2	1	—	44	6·9	—	3	—	—	7	—	1	11	1·7	107	16·6
City of London	17,129	—	—	6	—	—	—	—	—	—	—	6	4·6	—	1	—	—	—	—	—	1	0·8	29	23·1
East Districts.																								
Shoreditch	108,869	—	25	17	—	—	—	1	12	6	—	61	7·3	—	18	1	2	4	—	3	28	3·4	147	18·2
Bethnal Green	127,662	—	35	27	—	4	—	—	17	2	1	86	8·8	—	13	—	3	6	—	3	25	2·6	156	16·5
Stepney	273,265	1	88	68	1	3	—	2	23	5	—	191	9·1	—	10	—	5	2	—	2	19	0·9	317	15·8
Poplar	160,222	—	36	35	—	2	—	1	17	2	—	93	7·6	—	16	1	2	6	1	3	29	2·4	200	16·1
South Districts.																								
Southwark	186,941	—	55	28	—	1	—	4	25	—	—	113	7·9	—	12	2	2	3	2	5	26	1·8	227	15·9
Bermondsey	124,213	—	22	8	—	3	—	1	11	1	—	46	4·8	—	15	—	1	12	—	2	30	3·1	188	19·7
Lambeth	296,724	—	65	32	—	4	—	2	16	4	—	123	5·4	—	5	1	4	4	—	3	17	0·7	350	15·1
Battersea	167,338	—	44	15	—	1	—	1	4	5	—	70	5·5	—	23	1	1	10	—	—	35	2·7	213	16·8
Wandsworth	338,998	—	99	29	—	1	—	3	9	9	1	151	5·8	—	17	1	3	6	—	4	31	1·2	288	11·1
Camberwell	262,020	—	63	15	—	3	—	2	13	5	—	101	5·0	—	4	1	1	4	2	1	13	0·6	301	14·8
Deptford	109,182	—	22	10	—	4	—	1	9	1	—	47	5·6	—	8	—	1	8	—	1	18	2·1	138	16·3
Greenwich	96,037	—	22	6	—	—	—	—	9	2	—	39	5·3	—	6	—	1	5	—	—	12	1·6	118	15·7
Lewisham...	172,433	—	33	15	—	—	—	1	4	—	—	53	4·0	—	8	—	—	2	—	3	13	1·0	155	11·5
Woolwich...	122,836	—	40	18	—	1	—	1	14	3	1	78	8·3	—	4	1	2	2	—	1	10	1·1	100	10·9
Port of London	—	—	1	—	—	—	—	—	4	—	—	5	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup. † The death-rates are corrected for variations in sex and age constitution of the populations of the several boroughs, the population of England and Wales being taken as the standard.

were 9 above the average, and included 5 in Stepney, 4 in Lambeth, and 3 each in Hammersmith, Islington, Bethnal Green, and Wandsworth. The 137 deaths from whooping-cough were 22 above the corrected average; this disease was proportionally most fatal last month in Hackney, Finsbury, Bermondsey, Battersea, Deptford, and Greenwich. The 10 fatal cases of enteric fever were one in excess of the corrected average number, and included 4 in Hackney and 2 each in Southwark and Camberwell. The mortality from diarrhœa and enteritis among children under 2 years of age was proportionally greatest in Paddington, Hammersmith, St. Pancras, Islington, Shoreditch, Bethnal Green, and Southwark. In conclusion, it may be stated that the aggregate mortality in London last month from the principal infectious diseases was 48·1 per cent. above the average.

HEALTH OF ENGLISH TOWNS.

In the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census, 8092 births and 4297 deaths were registered during the week ended Saturday, June 19th. The annual rate of mortality in these towns, which had been 13·7, 13·9, and 13·5 per 1000 in the three preceding weeks, further fell in the week under notice to 12·4 per 1000 of their aggregate population, estimated at 18,136,180 persons at the middle of last year. During the first 11 weeks of the current quarter the mean annual death-rate in these towns averaged 15·7, against 15·8 per 1000 in the metropolis. The annual death-rate last week ranged from 4·1 in Hornsey, 6·2 in Leyton, 6·6 in Ealing, 7·0 in Walthamstow and in Warrington, and 7·5 in Willesden, to 18·4 in Barnsley, 19·3 in Blackpool, 21·0 in Middlesbrough, 21·6 in Gillingham, and 21·8 in West Bromwich.

The 4297 deaths from all causes were 400 fewer than the number in the previous week, and included 374 which were referred to the principal epidemic diseases, against 489 and 449 in the two preceding weeks. Of these 374 deaths, 162 resulted from measles, 68 from infantile diarrhœal diseases, 60 from whooping-cough, 45 from diphtheria, 29 from scarlet fever, and 10 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases did not exceed 1·1 per 1000, which is the lowest rate recorded in any week of the current year. The deaths attributed to measles, which had been 221, 239, and 215 in the three preceding weeks, further declined to 162 last week, and caused the highest annual death-rates of 2·3 in Sheffield, 2·9 in Barnsley, 4·4 in Walsall, 4·5 in Middlesbrough, and 5·3 in West Bromwich. The deaths of infants (under 2 years) referred to diarrhœa and enteritis, which had been 64, 75, and 90 in the three preceding weeks, fell to 68 last week, and included 12 in London and 4 each in West Ham, Liverpool, Salford, and Sheffield. The fatal cases of whooping-cough, which had declined from 137 to 75 in the four preceding weeks, further fell to 60 last week, of which 24 occurred in London and 3 each in Birmingham, Liverpool, St. Helens, Leeds, and Sheffield. The deaths attributed to diphtheria, which had been 31, 50, and 33 in the three preceding weeks, rose to 45 last week, and included 6 in London, 5 in Southampton, and 3 in Leyton. The deaths referred to scarlet fever, which had increased from 20 to 29 in the four preceding weeks, were again 29 last week, of which 9 were registered in London, 4 in Manchester, 3 in Salford, and 2 each in Edmonton and Liverpool. The fatal cases of enteric fever, which had been 11, 13, and 7 in the three preceding weeks, rose to 10 last week, and included 2 in London.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had been 2252, 2267, and 2336, at the end of the three preceding weeks, had further increased to 2373 on Saturday last; 330 new cases were admitted during the week, against 257, 327, and 330 in the three preceding weeks. These hospitals also contained on Saturday last 1048 cases of diphtheria, 77 of measles, 54 of enteric fever, and 12 of whooping-cough, but not one of small-pox. The 995 deaths from all causes in London were 108 below the number in the previous week, and corresponded to an annual death-rate of 11·5 per 1000. The deaths referred to diseases of the respiratory system, which had steadily declined from 469 to 165 in the nine preceding weeks, further fell to 153 in the week under notice, and were 10 below the number registered in the corresponding week of last year.

Of the 4297 deaths from all causes in the 96 towns, 215 resulted from various forms of violence, and 342 were the subject of coroners' inquests, while 1250 occurred in public institutions. The causes of 43, or 1·0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in London and in its 14 suburban districts, in Sheffield, Leeds, Bristol, Hull, Newcastle-on-Tyne, and in 57 other smaller towns. Of the 43 uncertified causes, 8 were registered in Liverpool, 7 in Gillingham, 5 in Birmingham, 3 in Sunderland, and 2 each in Bootle, St. Helens, Darlington, South Shields, and Gateshead.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns, with an aggregate population estimated at 2,345,500 persons at the middle of this year, 1122 births and 704 deaths were registered during the week ended Saturday, June 19th. The annual rate of mortality in these towns, which had been 18·2, 18·9, and 17·9 per 1000 in the three preceding weeks, further declined to 15·7 per 1000 in the week under notice. During the first 11 weeks of the current quarter the mean annual death-rate in these towns averaged 18·5, against a corresponding rate of 15·7 per 1000 in the large English towns. Among the several towns the death-rate last week ranged from 7·0 in Clydebank, 7·6 in Falkirk, and 9·9 in Kilmarnock, to 18·6 in Ayr, 22·5 in Aberdeen, and 29·4 in Perth.

The 704 deaths from all causes were 102 fewer than the number in the previous week, and included 137 which were referred to the principal epidemic diseases, against numbers increasing from 90 to 148 in the four preceding weeks. Of these 137 deaths, 89 resulted from measles, 19 from whooping-cough, 17 from infantile diarrhœal diseases, 7 from diphtheria, and 5 from scarlet fever, but not one from enteric fever or from small-pox. The mean annual death-rate from these diseases was equal to 3·0, against 1·1 per 1000 in the large English towns. The deaths attributed to measles, which had been 72, 85, and 80 in the three preceding weeks, rose to 89 last week, and included 59 in Glasgow, 13 in Aberdeen, and 4 in Leith. The deaths referred to whooping-cough, which had been 43, 40, and 40 in the three perceding weeks, further declined to 19 last week, of which 8 occurred in Glasgow, 5 in Aberdeen, and 2 in Edinburgh. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 15, 10, and 12 in the three preceding weeks, further rose to 17 last week, and included 6 in Glasgow, 4 in Dundee, and 2 in Motherwell. The deaths attributed to diphtheria, which had been 10, 5, and 4 in the three preceding weeks, rose to 7 last week, of which 3 were registered in Glasgow and 2 in Paisley. The fatal cases of scarlet fever, which had been 5, 7, and 12 in the three preceding weeks, fell to 5 last week, and included 2 in Glasgow.

The deaths referred to diseases of the respiratory system, which had been 141, 145, and 126 in the three preceding weeks, further fell to 93 in the week under notice, but were 16 in excess of the number registered in the corresponding week of last year. The deaths from different forms of violence numbered 21, against 35 and 25 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the 27 town districts of Ireland, with an aggregate population estimated at 1,212,380 persons at the middle of this year, 571 births and 331 deaths were registered during the week ended Saturday, June 19th. The annual rate of mortality in these towns, which had been 16·4, 17·0, and 15·4 per 1000 in the three preceding weeks, further fell to 14·2 per 1000 in the week under notice. During the first 11 weeks of the current quarter the mean annual death-rate in these towns averaged 18·8, against corresponding rates of 15·7 and 18·5 per 1000 in the English and Scotch towns respectively. The annual death-rate last week was equal to 16·4 in Dublin (against 11·5 in London and 17·0 in Glasgow), 13·2 in Belfast, 10·2 in Cork, 11·4 in Londonderry, 8·1 in Limerick, and 13·3 in Waterford, while in the 21 smaller towns the mean rate was 15·2 per 1000.

The 331 deaths from all causes were 26 fewer than the number in the previous week, and included 25 which were referred to the principal epidemic diseases, against 27 and 21 in the two preceding weeks. Of these 25 deaths, 7 resulted from infantile diarrhœal diseases, 6 each from measles and whooping-cough, 4 from scarlet fever, and 2 from diphtheria, but not one from enteric fever or from small-pox. The mean annual death-rate from these diseases was equal to 1·1, against corresponding death-rates of 1·1 and 3·0 per 1000 in the English and Scotch towns respectively. The deaths of infants (under 2 years) attributed to diarrhœa and enteritis, which had been 4, 12, and 2 in the three preceding weeks, rose to 7 last week, and comprised 5 in Dublin and 2 in Belfast. The deaths referred to measles, which had been 10, 3, and 7 in the three preceding weeks, were 6 last week, and included 5 in Belfast and 1 in Ballymena. The fatal cases of whooping-cough, which had been 3, 5, and 9 in the three preceding weeks, fell to 6 last week, of which 3 occurred in Dublin. The 4 deaths attributed to scarlet fever were slightly in excess of the average in the earlier weeks of the quarter, and included 2 in Belfast. The 2 fatal cases of diphtheria were registered in Dublin.

The deaths referred to diseases of the respiratory system, which had been 63, 56, and 64 in the three preceding weeks, fell to 57 in the week under notice. Of the 331 deaths from all causes, 103, or 31 per cent., occurred in public institutions, and 8 resulted from different forms of violence. The causes of 13, or 3·9 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 96 English towns the proportion of uncertified causes did not exceed 1·0 per cent.

Correspondence.

"Audi alteram partem."

THE POSITION OF THE ARMY CONSULTANTS.

To the Editor of THE LANCET.

SIR,—Questions in Parliament and correspondence in the papers have called attention to the position of the war consultants, whose appointment gave such universal satisfaction. Criticism naturally followed the discovery that those of the Navy had £5000 a year while the Army consultants had only the pay of their rank. No doubt there was a difficulty. While it would be possible to call the President of the Royal College of Physicians "Colonel," to address the President of the Royal College of Surgeons as "Admiral" would be Gilbertian! Pay, not rank, appears to have been the solution. This differential treatment seemed so unfair that it was hoped that the Army consultants would at once have been put on the same footing as their brethren in the Navy; but the tone of the questions in the House suggests a feeling that the pay of their rank is quite sufficient. I sincerely hope that this narrow view will not commend itself to Parliament. To the call of sacrifice in this crisis all willingly respond, and in the most distant parts of the Empire professional men have given up large remunerative practices to join the forces. But it is not fair to entail heavy losses upon a group of men selected for their special abilities. The earning life of a consultant is short—only 10 or 15 years of the "cakes and ale" stage. In a long expensive apprenticeship he gives to the poor from three to six hours a day of gratuitous service, in which he gains an experience of which the community at large reaps the benefit. We have no right to commandeer the brains of such men without a recompense proportionate to their talents and to their obligations. Many of them have fixed charges, domestic and educational, from three to four times in excess of the ordinary pay of a lieutenent-colonel in the army. Some, of course, can afford the sacrifice, but others, though making it willingly, cannot do so without injustice to their families. As absence of a year or two puts a consultant out of touch with his *clientèle*, these men have to face not only an immediate but a prospective loss of income.

Having seen the practice of several of the naval consultants, I can testify that the country is getting worth for its money, not only in the character of the work, but in the stimulus given to the environment in which it is done.

I am, Sir, yours faithfully,

Oxford, June 19th, 1915. WILLIAM OSLER.

THE WAVE-LENGTH OF VERY HARD X RAYS.

To the Editor of THE LANCET.

SIR,—THE LANCET of April 17th contained an article by one of us on the penetrating power of X rays from the Coolidge tube, and the question was raised as to how nearly the X rays may approach in penetrating power that of the hard gamma rays of radium. In this connexion it was stated that the very hard X rays emitted from the tube under a spark-gap of 30 cm.—i.e., about 130,000 volts—had a wave-length about three times that of the shortest gamma rays from radium that had been measured—viz., $0{\cdot}71 \times 10^{-9}$ cm. It was, however, stated that the observations did not preclude the possibility of still more penetrating X rays being produced, but that if harder X rays were present they did not contribute more than about 1 part in 50 to the effects associated with the heavily screened radiation.

At a lecture delivered at the Royal Institution on June 4th, Professor Sir E. Rutherford stated that in conjunction with Professor Barnes and Mr. H. Richardson he had for some time been engaged in an investigation upon the manner in which the wave-length of the X rays generated in the Coolidge tube depended upon the impressed voltage. He said that the hardest X rays which they had been able to produce were just about twice the wave-length of the hardest gamma rays from radium, the surprising fact being that there was only a small increase in the penetrating power of the rays when the voltage was increased from 125,000 to 145,000, and that no appreciable change resulted with a further increase to 175,000. This result refers to the rays of maximum penetrating power, and was obtained by such heavy screening of the beam of the X rays that its intensity was reduced to about one-thousandth part of its initial value.

Professor Rutherford drew attention to the importance which these facts have upon certain physical theories, and expressed the opinion that about 2,000,000 volts would probably be required to produce X rays of the same wave-length as the hardest gamma rays from radium. Considering the authority with which this opinion is invested we may assume that this often-discussed question is now settled and that a practical limit has been set to the hardness of X rays which are likely, at any rate in the near future, to be available for clinical purposes. It is of immediate interest in this connexion to know the proportion that these rays of very short wave-length bear to the whole radiation coming from the tube; from the fact that they were only revealed when very heavy screening was resorted to, it may be inferred that they form a very small percentage of the whole radiation. With an improved yield in the amount of radiation from the Coolidge tube, it remains to be seen whether they will be sufficient in quantity for therapeutic purposes. It may be stated that an approximately homogeneous beam of very hard X rays of wave-length $2{\cdot}1 \times 10^{-9}$ cm. is obtained from the Coolidge tube under a spark-gap of 30 cm. (points), the rays being screened by 7 mm. of aluminium. Such radiation has been in use in the electro-therapeutic department of the Middlesex Hospital during the last two months.

We are, Sir, yours faithfully,

C. R. C. LYSTER,

Middlesex Hospital, W., June 15th, 1915. SIDNEY RUSS.

THE UNIVERSITY OF MELBOURNE: PRACTICAL LOYALTY.

To the Editor of THE LANCET.

SIR,—I am instructed by the Chancellor of the University of Melbourne to state, for the information of your numerous readers, that at a meeting of the teaching staffs of the University and affiliated colleges held on April 21st the following resolutions were passed *nemine contradicente*:—

1. That during the continuance of the war the members of the staff of the University and affiliated colleges pledge

themselves to abstain from the use of alcohol, except under medical advice.

2. That the committee to be appointed at this meeting be requested to consider the question whether a University rifle club can be formed with advantage, and whether any other action can be taken in substitution for such a club, or in addition to it; and, further, that the members of the teaching staff of the University and the affiliated colleges pledge themselves to encourage volunteering among the members of the University by such means as may be approved by the committee to be formed.

3. Though many special services have already been performed by officers of the University at the invitation of Ministers, it is desirable to make it more definitely understood that such services are available, and therefore that the council be asked to approach the Federal and State Governments with the suggestion that the members of the staff of the University would be willing to offer their services, as far as compatible with the continuance of University work, to aid or supplement wherever possible the work of the scientific, technical, or professional branches of the Government departments during the war on any matters connected with Imperial defence in which their assistance may be useful.

4. That this meeting is of opinion that public lectures under the auspices of the University should be given on the subject of the war, its causes, its importance to Australia, and the political and other problems which will arise from it; and that the council be requested to give its support to this course.

5. That the administration of the above resolutions be placed in the hands of a representative committee, with power to appoint special committees.

Concerning the first resolution I am further instructed to state that, whilst every member of the staffs was informed of the meeting, which was in consequence largely attended, no attempt has been made to force the resolution upon those who were unable to attend.

I am, Sir, yours faithfully,

RICHARD J. A. BERRY,
Honorary Secretary, Executive University War Committee.

Melbourne, May 8th, 1915.

THE WAR AND THE MEDICAL PERSONNEL.

To the Editor of THE LANCET.

SIR,—Mr. Tennant's statement in Parliament that at present no more surgeons are needed either at home or abroad gives us time to ascertain the best means of supplying the large number which will be required shortly. In the *Times* "History of the War," No. 41, p. 74, the statement is made that after nine months of war there is still a shortage of 2000 surgeons. This is about the number whose services, according to Mr. Tennant, had been declined. If there was a shortage, why were the offers of 1900 applicants rejected? If there was no shortage, why does the writer of history say there was? The question is, has the writer of history knowledge of facts and reliable figures of which Mr. Tennant is ignorant? The answer is in the negative. For the credit of the profession and of history let it be put on record that there was not a shortage of surgeons after nine months of war; but, even if there were, it was from no lack of offers.

With your permission, I propose briefly to review the present and future situation. A good deal of solicitude has been expressed, by those not conversant with general practice, lest there should be a future shortage of doctors. The truth is that through the passing of the Insurance Act, the same population will not support anything like the same number of medical men; and it would probably be a good thing for the profession and for the public, if no students, of either sex, entered at the schools of medicine for the next five years. In addition most patients will be financially crippled by the war and doctors will be the first to suffer and the last to be paid. In the present situation, it is certain every medical man would offer his services if our wounded wanted him, provided that he had some guarantee that his practice would be safeguarded in his absence. The only thing clear from the various schemes advanced in the interest of the absentee is that there will be a good deal of friction or even litigation on his return.

Now, Sir, the one authority capable of reducing this friction to a minimum is the General Medical Council. The service of the Council would be *pro patria*, and if undertaken would induce quite enough medical men to offer themselves for the succour of our sick and wounded. The expense might well be met by a Government grant.

If the General Medical Council issued a short scheme equitable to the absentee and to the man who carried on the practice, and at the same time agreed to mediate in case of dispute, there would be an ample supply of military surgeons. No other body has the requisite moral force behind it. At present certain reserve battalions of Territorials seem to be short of surgeons, but this is work that can be done by civilian doctors in the districts where the troops are stationed.

The pay of the Territorial surgeon is a strange anomaly. In the past, in many cases, he has given money and much time, with his only reward a good-natured derision. He now gets less than two-thirds the pay of any recently qualified young man who likes to join Kitchener's army. Mr. Harold Baker stated in the House that there is no hardship, since the bargain was made with open eyes. The inference is that the penalty for patriotism is 9s. a day. History will do more justice to the Territorial, for it will say he saved Calais, perhaps England.—I am, Sir, yours faithfully,

Formby, June 21st, 1915. ARTHUR C. WILSON.

"MILITARY HONOURS."

To the Editor of THE LANCET.

SIR,—With regard to the letter appearing under this title in your issue of June 12th may I suggest to Mr. W. H. Clayton-Greene that perhaps time might have been saved if instead of giving his certificate to the registrar he had first of all written to the coroner stating the circumstances of the man's death, and at the same time intimating his willingness to give a certificate of death should the coroner approve. By the same post the War Office could be notified of the death and requested to take the funeral in hand. There is a point here, of course, which should not be overlooked, that some coroners prefer all communications to be made through the police or through their own officer. Then, again, it was natural that the coroner should want to know of any relative for the purpose of identification. The War Office then having been apprised that a military funeral had to be provided could have forthwith ordered a coffin from the undertaker, and the latter would begin his work at once, probably the day after death. It would surely also be the duty of the undertaker to arrange all the details of the funeral, including the services of the clergyman and the time and place, and in this connexion he would probably like to consult with the sister mentioned in Mr. Clayton-Greene's letter. Meanwhile the coroner is considering whether he can allow Mr. Clayton-Greene to give a certificate of death in the

usual way. He decides yes, and straight away says so. Mr. Clayton-Greene gives his certificate, all for nothing, on the statutory form: the sister, or the nurse who witnessed the death, or the undertaker conveys the same to the registrar of the district or subdistrict. Finally, the registrar makes a copy in his register and also makes a duplicate copy for the undertaker, which is handed to the clergyman at the graveside.—I am, Sir, yours faithfully,

Weston-super-Mare, June 17th, 1915. R. A. EARLE.

"GROWING PAINS" AND RHEUMATISM?

To the Editor of THE LANCET.

SIR,—I think Dr. M. H. Williams, in the interesting paper on Rheumatism in Children appearing in your issue of June 19th, rather overstates the case when she advances the opinion that aching of the legs in children is almost always due to rheumatism—prefacing this remark by stating that by rheumatism she means infection by a specific organism, and following it up by saying that the riddle of treatment is unanswerable. There is no doubt but that her words contain much truth. Dr. Williams, however, makes no mention of what in my opinion is (in this locality at any rate) the commonest cause of "growing pains," and that is the absorption of toxins through adenoid vegetations. It is quite extraordinarily common in my experience to find children with a tendency to fidgets, a constantly raised temperature up to 99·5–100° F., and a muffling of the first cardiac sound in which the whole state can be completely altered by removal of adenoids. I particularly wish to state I do not mean obvious adenoid cases with obstructive signs. Careful examination will almost certainly show a few soft and slightly enlarged cervical glands, but with this exception the signs are general and not local. Treatment by salicylic acid compounds causes no more than a temporary lowering of temperature, and in the cases I have in mind the tuberculin skin tests are negative—both human and bovine.

I have no means of knowing whether the toxin absorbed is that of the specific organism of Poynton and Paine; but if it is, the riddle of treatment can be very readily solved, which is certainly not the experience of most of us with that organism or one closely allied to it.

I am, Sir, yours faithfully,

Chiswick, W., June 21st, 1915. H. O. BUTLER.

THE POSITION OF SURGEONS TO TRANSPORTS.

To the Editor of THE LANCET.

SIR,—Various companies are advertising for ships' surgeons and offering the sum of £15 to £20 per month as salary to those who act in this capacity. One ship was chartered for transport work and the company it belonged to could not procure a surgeon, although they were prepared to offer £500 per annum. Eventually the company arranged with a military medical officer to act as ship's surgeon at the rate of £1 per day. Personally I have "signed on" at the rate of £15 per month, and so, as I am in distant parts, do not see much chance of a remedy. Further, there is, I believe, a war bonus paid by the Admiralty to every member of the crew for war risks; but so far I have been unable to ascertain from this company, a well-known line, whether any proportion is to be awarded to the surgeon.

Besides the important matter of pay, intending surgeons in the Mercantile Marine and passenger ships ought to investigate accommodation provided for them. I berth next to the cook, the barman, and the head waiter in the "slums" of the ship. There is plenty of other work for medical men to do now, and the present is a good opportunity of securing better conditions all round for the doctor in the Mercantile Marine.

I am, Sir, yours faithfully,

June 23rd, 1915. "M."

PROLONGED ANÆSTHESIA.

To the Editor of THE LANCET.

SIR,—Which is the longest period over which an anæsthetic has been known to be given for one operation? I had just recently a case of a man, aged 82, operated upon for malignant growth of the pelvic colon, which took exactly four hours, and therefore the anæsthetic lasted just a few minutes over this time. The patient stood the anæsthetic very well, did not vomit after it, and six hours after the operation was finished he was able to converse with his friends.

The anæsthetic I used throughout the operation was ether, with the exception of a few minutes at the beginning, when chloroform was used. No morphia or atropine was used beforehand, and it is extraordinary that he has not been troubled by any catarrh of the lungs or excess of secretion.

I am, Sir, yours faithfully,

June 19th, 1915. M.B., B.S.

Medical News.

VICTORIA UNIVERSITY OF MANCHESTER.—The following candidates have been approved for the degree of M.D.:—

J. S. B. Stopford (awarded gold medal) and G. C. Mort.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the committee 28 cases received grants amounting to £294, and two applicants were elected to vacant annuities of £20 each. The following is a summary of the cases relieved:—

Daughter, aged 47, of M.R.C.S. Eng. who practised at Clifton, Bristol. Applicant completely incapacitated owing to complications following operation for hernia. At present in a convalescent home. Lost use of both legs. Prior to illness earned a living by acting as children's nurse. Voted £10 in two instalments.—Daughter, aged 63, of L.R.C.S. Glasg. who practised at Liverpool. For a number of years acted as matron to a private mental home, but has not been able to save. A younger matron is now required, and applicant must try to obtain other work and finds it difficult at her age. Voted £12 in 12 instalments and referred to the Guild.—Widow, aged 34, of L.S.A. Lond. who died in January of this year, and had acted as locum-tenent in various places. Left the applicant totally unprovided for with three children ages 12 to 17 years. Hopes to obtain some employment. Voted £10 in two instalments.—Widow, aged 73, of L.S.A. Lond. who practised at Bermondsey, and died in 1887. Until the outbreak of war was able to make a living by taking in boarders at her house on the South Coast. All the August and autumn bookings last year were cancelled, and has had to close up the house temporarily. Lives in own house, which is heavily mortgaged. Voted £15.—M.R.C.S. Eng., aged 58, who had practised in the Midlands, and now suffering from total paralysis of the right side and unable to speak or write. Only income a pension of £30 per annum, and a little from the sale of his practice. His wife has to devote all her attention to him, and the three children are unable to help financially. Voted £2, and referred to the Guild for report.—Widow, aged 70, of M.D. St. And. who practised in Pall Mall, S.W., but was incapacitated for some years before death in May of this year, and was a pensioner of the Fund, and received assistance from another charity. Applicant left entirely unprovided for. Voted £2, and referred to the Guild for report.—Daughter, aged 66, of M.R.C.S. Eng. who practised in London. Has earned a living as a teacher of languages, but cannot obtain pupils at present. Lives with two sisters, who try to earn a living by keeping a boarding-house, but not successfully. One of the sisters also receiving a grant from the Fund. Voted £12 in 12 instalments and referred to the Guild for report.—Widow, aged 54, of M.R.C.S. Eng. who died in 1897 and practised at Stockton-on-Tees. Left totally unprovided for with two young children to educate and keep. Has earned a little by needlework and has acted as caretaker. Eyesight now very bad. Daughter

now earning a little and son has joined the army. Previous help 11 times, £97. Voted £9 in 12 instalments.—M.R.C.S. Eng., aged 48, who practised at Aysgarth, and as surgeon to a steamship company, which took him abroad, where he contracted sunstroke with very bad effects, and is now totally incapable of doing anything. Lives with an aunt who has barely sufficient for her own needs. Previous help £10. Voted £10 in two instalments.—Widow, aged 52, of L.R.C.P. & S. Edin. who practised at New Quay. Health very indifferent and has recently had an accident which has incapacitated her from doing any work. Has two sons, sailors, but they are only able to help very slightly. Relieved 12 times, £125. Voted £12 in 12 instalments.—Widow, aged 69, of M.R.C.S. Eng. and L.S.A. Lond. who died in 1887, and practised at Heathfield, Sussex. Used to earn a bare living by taking in boarders, but is now suffering from rheumatoid arthritis, and has had to give up her home, and is now in a home for gentlewomen, but requires money for food. Previous help seven times, £75. Voted £12 in 12 instalments.—Widow, aged 57, of M.R.C.S. Eng. who practised at Enfield, and died in 1905. Applicant has indifferent health and daughter is suffering from spinal diseases. Only income a little help from friends. Relieved four times, £40. Voted £5.—M.D. Aberd., aged 62, who practised at Walsall. Suffering from rheumatoid arthritis since 1881. Has four children ages 4 to 16 years. Has three small pensions from other charities. Previous help seven times, £63. Voted £12 in 12 instalments.—Daughter, aged 60, of L.F.P.S. Glasg. who practised at Mauchline. Health very bad and unable to undertake any definite work. Only certain income a pension from another charity of £12 per annum. Relieved eight times, £80. Voted £12 in 12 instalments.—Widow, aged 50, of L.R.C.P. & S. Edin. who practised in Jamaica. At husband's death in 1891 was left with three daughters and totally unprovided for. Health has been very bad, and applicant has just been elected an out-patient pensioner of a home for incurables. Lives with married daughter, who cannot afford to keep her. Relieved seven times, £84. Voted £12 in 12 instalments.—Widow, aged 63, of M.D. Glasg., who died in 1908 and practised at Glasgow. Applicant has tried to make a living by taking in boarders, but latterly has not been successful, and sister who helped in the house is now bedridden with paralysis. Relieved once, £12. Voted £12 in 12 instalments.—Widow, aged 49, of L.S.A. Lond. who practised at Leicester and died in 1910. Applicant was left with four children, whose ages are now 11-21. The two eldest daughters are clerks and pay over their wages to their mother, but this is not sufficient to keep the house. The applicant tries to supplement her income by doing a little needlework. Relieved three times, £34. Voted £12 in 12 instalments.—Daughter, aged 76, of M.R.C.S. Eng. who practised at Hackney. Owing to great age the applicant is unable to undertake any work. Three brothers who used to help her have recently died. Only income £33 per annum. Relieved three times, £36. Voted £15 in 12 instalments.—Widow, aged 66, of L.S.A. Lond. who practised at Ipswich. Since the death of her husband in 1901 has endeavoured to make a living by letting apartments, but not very successfully. Children only able to help very little. Relieved 13 times, £140. Voted £12 in 12 instalments.—Daughter, aged 51, of M.R.C.S. Eng. who practised at Box, Wilts. Applicant is a permanent invalid and unable to work. Lives with sister who earns a little and has a grant from the Fund. Relieved three times, £36. Voted £12 in 12 instalments.—Daughter, aged 47, of M.R.C.S. Eng. who practised in India. Has endeavoured to earn a living by taking in boarders, but cannot make ends meet. Has just removed into the country and pays less rent, and hopes in the future to manage without troubling the Fund. Relieved four times, £42. Voted £12 in 12 instalments.—Widow, aged 44, of L.R.C.P. & S. Edin. who practised in South Wales and died in 1903. Left unprovided for at husband's death with two daughters, the eldest of whom is studying as a teacher of domestic economy and hopes to earn a little soon. Applicant earns a little as a maternity nurse. Relieved nine times, £65. Voted £5.—Widow, aged 35, of M.R.C.S. Eng. who practised at Bow, E., and died in 1912. Applicant has one child, and being a nurse by profession endeavours to make a living by taking in mental cases in her house in the suburbs, but finds it difficult to make ends meet. Wants assistance towards the education of her son. The case was referred to the Guild, and a certain sum allocated subject to the report being satisfactory.—Widow, aged 60, of M.D. Glasg. who practised at Birkenhead and other places. Left unprovided for at husband's death. Three daughters, ages 31-33 years. The two eldest earning a little, but the youngest is a confirmed invalid. Applicant suffering from neuritis. Relieved six times, £96. Voted £6 in 12 instalments.—Daughters, ages 48 and 56, of M.D. Aberd. who practised in Yorkshire. Both are unable to work owing to illness. Only income £20 each per annum. Relieved twice. £20. Voted an immediate grant of £1, and referred to the Guild for report.—Daughter, aged 60, of M.D. Edin. who practised in London. Health very indifferent, and only income about £4 per annum from needlework. Lives with a sister who is an invalid. Relieved seven times, £49. Voted £12 in 12 instalments.—Widow, aged 59, of L.R.C.P. & S. Edin. who practised at Balham, and died in 1913. Lives in own house and takes in boarders when she can get them, but cannot get sufficient to make it pay. Relieved twice. £14. Voted £12 in 12 instalments.—Daughter, aged 67, of M.R.C.S. Eng. who practised in Lancashire. In consequence of ill-health and age unable to work. Only income £30 per annum from another charity, and has just been elected to an unfurnished home. Wants help for furnishing. The Liverpool Branch of the Guild are assisting. Relieved four times, £60. Voted £10 at the direction of the Guild at Liverpool.

The claims of the Fund are steadily increasing, largely in consequence of the war, and though the ordinary subscriptions remain at much the same level, there is a constantly increasing adverse balance. At the last meeting the committee was faced with an overdrawn account of £92, which was increased by the £294 then spent in grants to a total deficit of £386. To meet this the committee has had to draw upon its limited reserves, and unless support be rapidly forthcoming its work will have to be curtailed. Subscriptions may be sent to the honorary treasurer, Dr. Samuel West, 11, Chandos-street, Cavendish-square, London, W.

CENTRAL MIDWIVES BOARD.—A meeting of the Central Midwives Board was held at Caxton House, Westminster, on June 17th, with Sir Francis H. Champneys in the chair. A letter was considered from the town clerk of Southend-on-Sea asking the Board for suggestions as to a method by which the disability experienced by lying-in women in obtaining medical aid in response to requests made by certified midwives under the rules of the Board may be dealt with. The Board directed that the town clerk be informed that the Board has ever since its establishment urged the Privy Council to promote legislation for dealing with the question of the payment of medical practitioners called in at the instance of midwives in accordance with the rules of the Central Midwives Board; as the Board's opinion has been asked they may say that they think that if the guardians could see their way to pay the prescribed fees to the practitioner duly called in in the first instance and to recover the fees from the patient where the patient is able to pay, it would greatly conduce to the welfare of the poor mothers of the community. A letter was considered from the medical officer of health of Chester asking the Board's opinion as to the propriety of a midwife recommending hand-feeding. The Board directed that the medical officer be informed that the question as put is too vague to admit of a definite reply. If such a reply is desired particulars will have to be furnished in a definite case or in definite cases.

The following letter was read from the honorary secretary of the Midwives Institute as to the decision of the High Court in the case of a Midwife *v.* Central Midwives Board:—"The Midwives Institute has noted with great regret the reversal by the High Court of the decision of the Central Midwives Board in the case of a midwife who was struck off the roll. We understand that the charge was one of immorality, and that the reversal of the Board's decision was made in consequence of some technical omission. The Midwives Institute feels that the result of this case is liable to very serious misconstruction by the general public. I have therefore been requested to forward to your Board the following resolution: 'The Midwives Institute respectfully ask the Central Midwives Board to make a pronouncement, which can be reported in the press, that in spite of the High Court's reversal of the Central Midwives Board's decision in a recent case the Board will, as it has heretofore done, continue to support the *moral* as well as the *professional* status of practising midwives.'" The Board decided that the honorary secretary of the Midwives Institute be informed that the decision of the High Court in the case of a Midwife *v.* Central Midwives Board, although reversing the decision of the Central Midwives Board to remove the name of the midwife from the roll, confirms the Board in their position as the authority which determined what is and what is not misconduct in a midwife, and decided that misconduct is not to be limited to misconduct in a professional sense; the Board has held that conduct which, before enrolment would render it impossible to certify that a candidate was "of good moral character" renders her, after enrolment, liable to be removed from the roll for "misconduct."

DEATH OF A SHEFFIELD MEDICAL MAN.—Mr. Herbert Leonard Hudson, L.R.C.P. Irel., died at his residence in Sheffield on June 11th in his fifty-eighth year. He was born in Calcutta and at an early age came to England with his parents, who settled in Hull. About the year 1887 he began medical practice in Sheffield, where he became popular with all classes. He leaves a widow, a son who is studying medicine at Sheffield University, and a married daughter.

WESTERN COUNTIES INSTITUTION FOR MENTAL DEFECTIVES.—At the annual meeting of the subscribers to the Western Counties Institution, held recently at Starcross, under the presidency of the Earl of Devon, it was stated that during the 50 years the institution had been in existence 1451 children had been admitted. The first annual report showed that 12 children were admitted at an expenditure of £965. Last year 347 cases were treated, the daily average number being 303, and the annual expenditure was £11,077.

THE HERITAGE COLONY.—H.R.H. Princess Louise, Duchess of Argyll, will inspect the military wards named after her at the Heritage Colony for Boys at Chailey on Thursday next, July 1st.

BRITISH SYMPATHY WITH ITALY.—The British residents and visitors in Rome propose that their sympathy with their gallant ally, Italy, should take the form of assistance to the wounded Italian soldiers by the provision of complete equipment for one or more wards, according to the funds raised, in one of the hospitals which are now being prepared. The Medical Inspector-General, Lieutenant-General Luigi Ferrero di Cavallerleone, has signified his cordial approval of this suggestion, and will be happy to reserve a special ward, or wards, to be equipped by British aid. Subscriptions, however small, will be gratefully received by Dr. George Sandison Brock, M.D., 6, Corso d'Italia, Rome, who will also gladly undertake the application of the sum collected to its intended purpose. If not sent to him personally subscriptions should be addressed to Mr. E. J. Wallman, care of Messrs. Cook and Son, 54, Piazza Termini, Rome, who will duly acknowledge their receipt.

MEDICINE AND THE CIVIL LIST.—Among the Civil List pensions granted during the year ended March 31st, 1915, are one of £80 to Mrs. J. E. Baker, in consideration of the services of her husband, the late Dr. Hugh Baker, in the investigation and treatment of sleeping sickness in Africa; one of £60 to Mrs. Constance Emily Burch, in consideration of the value of the researches of her husband, the late Dr. George James Burch, F.R.S., in physics and physiology; one of £50 each to Mr. William Grenfell Wallace, and Miss Violet Wallace, in consideration of the scientific work of their father, the late Dr. Alfred Russel Wallace, O.M.; and one of £150 to Dr. Charlton Bastian, F.R.S., in consideration of his services to science.

THE LATE DR. JAMES STEWART ORCHARD.—The death of Dr. James S. Orchard took place at his residence, West Didsbury, Manchester, on June 18th. Up to the end of 1914 he was the medical superintendent of the Withington Hospital, Manchester, a position which he had held since 1879. Dr. Orchard was at one time medical officer of the Salford Union Infirmary.

THE COLONIAL NURSING ASSOCIATION.—The nineteenth annual report of the executive committee of this association for the year ending March 31st, 1915, has just been issued. The object of the association is to provide trained nurses for hospital and private work in the British colonies and dependencies, and among other British communities abroad, and in this work there has been a steady advance during the year under notice. Although the outbreak of war has very considerably increased the difficulties of filling colonial posts, the number of nurses at work during the past year has been 338, this being in excess of any previous year. Of this number, 93 have been employed as private nurses, 17 in hospitals not under Government, 21 under the Government of Western Australia, and 207 in Government service in the Crown colonies.

ROYAL VICTORIA INFIRMARY, NEWCASTLE-ON-TYNE.—The quarterly court of governors of this institution was held on June 17th under the chairmanship of Alderman W. J. Sanderson. The financial statement showed that the total expenditure for the four months ending April 30th, including extraordinary expenditure, was £15,043, while the total income, including legacies, was £13,533. Since the outbreak of the war 2300 sick and wounded soldiers have been treated in the wards of the Royal Victoria Infirmary, and in the out-patient department more than 30,000 applicants have been inoculated against typhoid.

PRESENTATION OF THE LONG SERVICE MEDAL TO MAJOR JAMES PHILIP STEPHENS WARD, R.A.M.C. (T.).—At the Plymouth Citadel on June 13th Major Ward, who is attached to the Devon Royal Garrison Artillery, was presented with the long service medal by Major-General A. P. Penton, C.V.O., C.B., Garrison Commander.

THE Lecomte triennial prize, £2000 in value, has been awarded by the Paris Académie des Sciences to Sir Almroth Wright.

Mr. A. H. Tubby has been elected an Honorary Member with medal of the First Class of the Società Fisico-Chimica Italiana.

A MEDICAL BARRISTER.—Mr. J. Beard, medical officer of health of the city of Carlisle, has been called to the Bar at Gray's Inn.

The War.

THE CASUALTY LIST.

SINCE our last issue the following names of medical men are in the lists of those who have fallen in the war from wounds or gas-poisoning:—

Died of Wounds: Major J. C. Taylor, R.A.M.C. (T.F.), attached 4th Battalion Royal Scots Fusiliers (T.F.).

Lieutenant E. A. Wright, R.A.M.C. (only son of Mr. A. Wright, M.R.C.S., L.S.A., of Romford), from septic poisoning contracted in attending on patients.

Wounded: Lieutenant W. J. Maloney, attached 4th Worcester Regiment, Major O. R. Ennion, East Anglian Field Ambulance (T.F.), Captain C. C. Fitzgerald, attached 7th Lancashire Fusiliers (T.F.), Lieutenant D. Bell, and Lieutenant G. S. Deane (*gas-poisoning*), all of the R.A.M.C.; Lieutenant H. M. Gauntlett, attached 4th Oxford and Bucks Light Infantry, Lieutenant W. W. Adamson, 2nd West Riding Field Ambulance, both of R.A.M.C. (T.F.).

Prisoner: Lieutenant J. M. Gillespie, R.A.M.C. (previously reported missing).

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following have to be added to the sons of medical men who have fallen in the war:—Second Lieutenant W. P. Heffernan, second son of Mr. W. K. Heffernan, L.R.C.P. & S. Irel., J.P., of Killenaule; Second Lieutenant G. M. Hume, third son of Dr. G. H. Hume, late of Newcastle-on-Tyne; Lieutenant W. H. Fox, elder son of Dr. G. M. Fox, of Walsall; Lieutenant C. C. A. Ratcliff-Gaylard, elder son of Dr. J. Ratcliff-Gaylard, of Birkenhead.

Flight Sub-Lieutenant Warneford, V.C., may also be included here, for he was the son of Mrs. Corkery, wife of Lieut.-Colonel Corkery, R.A.M.C.

MENTIONED IN DESPATCHES.

The following officers connected with the medical profession and occupying the indicated positions with our army are recommended in Sir John French's despatch, dated May 31st and issued from the War Office this week, "for gallant and distinguished service in the field." Alas, several of them are no longer with us.

General Headquarters Staff, &c.

Atkins, Col. (temp.) J.
Beveridge, Lt.-Col. W. W. O., D.S.O., R.A.M.C.
Birrell, Lt.-Col. E. T. F., C.M.G., R.A.M.C.
Brackenridge, Lt.-Col. F. J., R.A.M.C.
Burtchaell, Col. C. H., C.M.G.
Carr, Col. H.
Chopping, Lt.-Col. A., R.A.M.C.
Cummins, Lt.-Col. S. L., R.A.M.C.
Davidson, Maj. P., D.S.O., R.A.M.C.
Dwyer, Capt. P., R.A.M.C.
Easton, Maj. P. G., R.A.M.C.
Ensor, Lt.-Col. H., D.S.O., R.A.M.C.
Evans, Lt.-Col. P., R.A.M.C.
Fawcus, Lt.-Col. H. B., R.A.M.C.
Fell, Lt.-Col. M. H. G., R.A.M.C.
Ferguson, Col. N. C., C.M.G., R.A.M.C.
Forrest, Lt.-Col. J. V., R.A.M.C.
Geddes, Col. R. J., D.S.O.
Irvine, Maj. F. S., R.A.M.C.
Macpherson, Surg. Gen. W. G., C.B., C.M.G.
Morgan, Lt.-Col. C. K., R.A.M.C.
O'Donnell, Surg.-Gen. T. J., D.S.O.
Penny, Lt.-Col. F. S., R.A.M.C.
Porter, Surg.-Gen. R.
Ritchie, Capt. M. B. H., R.A.M.C.
Swan, Col. W. T.
Treneme, Surg.-Gen. F. H., C.M.G.
Webb, Lt.-Col., A. L. A., R.A.M.C.
Anderson, Surg.-Lt. E. D., 1st Life Guards.
Luxmore, Surg.-Capt. E. J. H., 2nd Life Guards.
Pares, Surg.-Maj. B., Royal Horse Guards.

Medical Service and R.A.M.C.

Bowlby, Col. (temp.) Sir A. A., K.C.M.G.
Burghard, Col. (temp.) F. F.
Dawson, Col. (temp.) Sir B. E., K.C.V.O.
Gray, Col. (temp.) H. M. W.
Herringham, Col. (temp.) Sir W. P.
Lister, Col. (temp.) W. T.
Meek, Col. J.
Makins, Col. (temp.) Sir G. H., K.C.M.G., C.B.
Moynihan, Col. (temp.) Sir B. G. A.
Wright, Col. (temp.) Sir A. E.
Young, Col. C. A
Ainsworth, Maj. R. B

Bartlett, Maj. B. S.
Bell, Capt. W. J. E.
Bond, Capt. A. H.
Bostock, Maj. J. S.
Boyce, Capt. W. W.
Boyle, Lt.-Col. M.
Brown, Maj. R. T.
Browne, Capt. C. G.
Burney, Capt. W. H. S.
Burnham, Maj. H. H. (attd. 2nd Canadian Artillery Brig.)
Cagney, Lt. (temp.) P.
Cairns, Lt. J. W. (T.F.)
Cannon, Lt. J. W., (S.R.)
Carter, Capt. H. St. M.
Chesney, Lt. W. McM. (S.R.)
Clarke, Lt. T. W. (S.R.)
Coplans, Capt. M. (T.F.)
Cowey, Maj. R. V.
Craig, Lt. D. D.
Crawford, Lt.-Col. G. S.
Crean, Capt. T. J., V.C. (Res. of Off.)
Cree, Lt. (temp.) R. E.
Dalrymple, Capt. (temp.) J.
Darling, Capt. W.
Dawson, Capt. G. F.
Devonald, Lt. A. E. L. (T.F.).
Duka, Capt. (temp.) A. T., D.S.O.
Fielding, Maj. T. E.
Foster, Capt. J. R.
Franklin, Maj. R. J.
Gale, Capt. R.
Galloway, Lt. (temp.) R. W.
Gilchrist, Lt. A. J. (S.R.)
Glynn, Lt. (temp.) A. S.
Goddard, Maj. C. E. (T.F.)
Harding, Maj. D. L.
Hart, Lt. (temp.) C. H.
Haycraft, Lt. (temp.) J. B.
Herrick, Lt.-Col. H.
Hewson, Capt. F. M.
Hill, Lt. (temp.) F. T.
Hincks, Lt. A. C. (T.F.).
Houston, Capt. J. W.
Howell, Capt. F. D. G.
Howell, Capt. H. L.
Ingram, Lt. (temp.) T. L.
Irvine, Capt. A. E. S.
James, Lt. (temp.) P. W.
Janion, Lt. (temp.) H. G.
Jones, Capt. J. B.
Just, Lt. (temp.) T. H.
Kavanagh, Capt. E. J.
Kelly, Lt.-Col. J. F. M.
Lane, Capt. J. W.
Langstaff, Lt.-Col. J. W.
Le Bas, Lt. (temp.) D.
L'Estrange, Maj. E. F. Q.
Lightstone, Lt. H. (T.F.).
Lindsay, Lt. A. B.
Lister, Lt. (temp.) W. H.
Lloyd-Jones, Capt. P. A.
Lovell, Lt. A. G. H.
McCarthy, Capt. W. H. L. (S.R.).
McCurry, Lt. W. T. (S.R.) (killed).
Macglashan, Capt. K. B. (S.R.).
Mackie, Lt. D. (S.R.).
McLaughlin, Capt. J. N. (S.R.).
Maclean, Lt. (temp.) I. C.
McLean, Lt. W. F. (S.R.).
McSheehy, Capt. O. W.
Martin, Maj. J. F.
Martyn, Capt. S. (T.F.).
Miller, Lt. W. A. (S.R.).
Moore, Lt. (temp.) E. H., D.S.O.
Morris, Lt. E. M. (T.F.).
O'Brien, Capt. C. W.
Page, Capt. C. M. (S.R.).
Pallant, Maj. S. L.
Pemberton, Lt. H. S. (S.R.).
Poe, Lt.-Col. J.
Preston, Lt. R. A.
Priestley, Lt. J. G.
Richards, Maj. F. G. (killed).
Richards, Capt. (temp.) O.
Robinson, Capt. T. T. H.
Rogers, Maj. H.
Rogers-Tilstone, Lt.-Col. J. M. (T.F.).
Sargent, Hon. Lt.-Col. (temp.) P.
Seelley, Lt. (temp.) E.
Shaw, Capt J. J. McI.
Slayter, Lt.-Col. E. W.
Smith, Lt. (temp.) A. C. S.
Smith, Lt. (temp.) P.
Somervell, Lt. L. C.
Stirling, Capt. A. D.
Stubbs, Capt. J. W. C.
Symons, Lt.-Col. F. A., D.S.O.
Thorne, Lt. (temp.) F. J.
Thurston, Lt.-Col. H. S.
Trist, Capt. J. R. R. (S.R.)
Turnbull, Lt. (temp.) D. C. (died of wounds).
Turner, Capt. C. H.
Vellacott, Capt. H. F. (S.R.).
Wear, Lt.-Col. A. E. L.
Webb, Lt.-Col. A. L. A.
Wedd, Lt. B. H.
Wells, Capt. A. G.
West, Maj. J. W.
Whitehead, Capt. N. T.
Wilkinson, Lt. (temp.) R. F.
Wilson, Lt. (temp.) C. McM.
Winter, Capt. H. G.
Woolfenden, Lt. (temp.) H. F.
Wood, Capt. J. L.
Woodhouse, Lt. (temp.) P. R.
Worthington, Maj. Sir E. S., Knt., M.V.O.
Worthington, Capt. F.
Wylie, Lt. T. W. (S.R.)

Royal Army Medical Corps (T.F.).

Bickerton, Capt. R. E., 84th Field Amb.
Bird, Maj. E. B., 28th Field Amb.
Blackwood, Capt. W., 25th Field Amb.
Burgess, Lt. R., 24th Field Amb.
Cameron, Lt.-Col. D. A., 86th Field Amb.
Fairbank, Capt. H. A. T., 85th Field Amb.
Fisher, Maj. D. L., 86th Field Amb.
Harrison, Capt. W. J. (attd. 6th Northd. Fus.)
Mackay, Maj. W. B. (attd. 7th Northd. Fus.).
Sharpe, Lt.-Col. W. S., 84th Field Amb.
Sprawson, Capt. E. C., 3rd Divn.
Waggett, Maj. E. B., 85th Field Amb.
Wardle, Lt. V. H., 86th Field Amb.
Whait, Lt.-Col. J. R., 85th Field Amb.

British Red Cross Society.

Fox, Dr. G. R. | Struthers, Dr. J. W.

Australian Army Medical Corps.

Eames, Lt.-Col. (temp.) W. L'E., C.B.

Staff, 1st Canadian Division.

Foster, Lt.-Col. (temp. Col.) G. La F., C.A.M.C.
Chisholm, Capt. (temp. Maj.) H. A., C.A.M.C.

Canadian Army Medical Corps.

Ford, Lt.-Col. F. S. L.
McPherson, Lt.-Col. D. W.
Ross, Lt.-Col. A. E.
Shillington, Lt.-Col. A. T.
Watt, Lt.-Col. W. L.
Duval, Maj. J. L.
Hardy, Maj. E. B.
Bell, Capt. F. C.
Brown, Capt. G. P.
Donaldson, Capt. A. S.
Fraser, Capt. J. J.
McGibbon, Capt. R. H.
McKillip, Capt. T. H.
McQueen, Capt. J. D.
Stone, Capt. E. L.
Haywood, Lt. A. K. (attached 3rd Canadian Batt.).

Indian Medical Service.

Anderson, Lt. F. J., 111th Indian Field Amb.
Atal, Maj. P. P. (killed).
Bamfield, Lt.-Col. H. J. K.
Barron, Maj. R. M., 113th Indian Field Amb.
Boulton, Maj. H., D.A.D.M.S., Meerut Divn.
Bowle-Evans, Lt.-Col. C. H., Lucknow Casualty Clearing Stn.
Gow, Lt. P. F.
Hime, Lt.-Col. H. C. R., R.A.M.C. (attd.).
Melhuish, Maj. H. M. H., 112th Indian Field Amb.
Needham, Maj. R. A.
Odlum, Maj. W. H., 112th Indian Field Amb.
O'Neill, Capt. J. S.
Ozzard, Lt.-Col F. R.
Rai, Capt. D. H. (attd. 6th Jats).
Reinhold, Capt. C. H., 111th Indian Field Amb.
Sheppard, Capt. A. L.
Taylor, Capt. John (attd. 1/39th Garhwal Rif.).
Trafford, Maj. W. L.
Wall, Lt.-Col. F.
White, Lt.-Col. W. W., 128th Indian Field Amb.

Indian Subordinate Medical Department.

Macqueen, Sen. Asst. Surg. and Hon. Lt. K. G. S.
Holmes, 1st Cl. Asst. Surg. J. A. H.
Maine, 1st Cl. Assist. Surg. W. J. S.
Rodgers, 2nd Cl. Asst. Surg. M. C. R.
Bouche, 3rd Cl. Asst. Surg. B. J.
Cummins, 3rd Cl. Asst. Surg. A. W.
Fox, 3rd Cl. Asst. Surg. H. A.
Fraser, 3rd Cl. Assist. Surg. A. G. L.
D'Arcy, 4th Cl. Assist. Surg. A. F. J.
Hill, 4th Cl. Assist. Surg. E. R.
Perkins, 4th Cl. Assist. Surg. J. W.
Gauri Shankar, 1st Cl. Sen. Sub-Asst. Surg.
Jesudasan, S., 1286 1st Cl. Sub-Asst. Surg. S.
Lachhmann Das, 829 1st Cl. Sub-Asst.-Surg.
Muhammad Raza Khan, 903 1st Cl. Sub-Asst. Surg.
Narayan-parshad Sukul, 997 1st Cl. Sub-Assist. Surg.
Salagram, 933 1st Cl. Sub-Asst. Surg.
Ganpat Kanoji Rao Rane, 379 3rd Cl. Sub-Asst. Surg.
Raj Singh, 1362 3rd Cl. Sub-Asst. Surg.
Upendra Kumar Ganguli, 1333 3rd Cl. Sub-Asst. Surg.

Indian Army.

Ramkrishna, Ganpat Shinde, 2nd Class Sub-Assist. Surg., 1st Batt. 39th Garhwal Rifles.
Cormack, Lt. H. S., I.M.S., 47th Sikhs.

THE HONOURS LIST.

Following Sir John French's despatch, dated May 31st, and the above list of names brought forward by the Commander-in-Chief, the King has approved of a long list of rewards for "services rendered in connexion with operations in the field." The following are the medical officers promoted or appointed to Orders:—

General Headquarters Staff, &c.

Brevet-Colonels.—Lieut.-Col. M. H. G. Fell and Lieut.-Col. H. Ensor.

C.B.—Lieut.-Col. W. W. O. Beveridge, D.S.O., Col. H. Carr, Col. R. J. Geddes, D.S.O., and Col. W. T. Swan.

C.M.G.—Lieut.-Col. S. L. Cummins, Lieut.-Col. P. Evans, Lieut.-Col. H. B. Fawcus, and Lieut.-Col. A. L. A. Webb.

D.S.O.—Major F. S. Irvine and Surg.-Major B. Pares.

Military Cross.—Capt. P. Dwyer.

Medical Service and R.A.M.C.

Brevet Lieut.-Colonel.—Major J. S. Bostock.

C.B.—Col. (temp.) F. F. Burghard, Col. (temp.) Sir W. P. Herringham, Col. J. Meek, Col. S. G. Moores, Col. S. Westcott, C.M.G., and Col. (temp.) Sir A. E. Wright.

C.M.G.—Lt.-Col. G. S. Crawford, Lt.-Col. T. H. J. C. Goodwin, D.S.O., Major J. F. Martin, Lt.-Col. J. C. B. Statham, Lt.-Col. H. S. Thurston, Lt.-Col. A. E. L. Wear, and Major Sir E. S. Worthington, M.V.O.

D.S.O.—Capt. C. G. Browne, Capt. H. St. M. Carter, Major R. V. Cowey, Capt. T. J. Crean, V.C., Major T. E. Fielding, Capt. R. Gale, Capt. P. A. Lloyd-Jones, Capt. O. W. McSheehy, Lieut.-Col. J. Poe, and Capt. (temp.) O. Richards.

Military Cross.—Lieut. W. McM. Chesney, Lieut. D. D. Craig, Capt. W. Darling, Capt. G. F. Dawson, Lieut. (temp.) F. T. Hill, Capt. H. L. Howell, Lieut. (temp.) P. W. James, Lieut. (temp.) H. G. Janion, Capt. J. B. Jones, Capt. E. J. Kavanagh, Lieut. (temp.) W. H. Lister, Lieut. (temp.) I. C. Maclean, Lieut. R. A. Preston, Lieut. (temp.) P. Smith, Capt. J. W. C. Stubbs, Capt. H. F. Vellacott, Capt. N. T. Whitehead, and Capt. H. G. Winter.

Staff, 1st Canadian Division.

C.B.—Lieut.-Col. (temp. Col.) G. La F. Foster.

D.S.O.—Capt. (temp. Major) H. A. Chisholm.

Canadian Army Medical Corps.

C.M.G.—Lieut.-Col. F. S. L. Ford.

D.S.O.—Capt. T. H. McKillip.

Military Cross.—Lieut. A. K. Haywood.

Indian Medical Service.

C.M.G.—Lieut.-Col. C. H. Bowle-Evans and Lieut.-Col. F. Wall.

D.S.O.—Capt. John Taylor.

Military Cross.—Capt. J. S. O'Neill and Second-class Sub-Asst. Surg. Ramkrishna Ganpat Shinde.

Brevet-Colonel.—Lieut.-Col. W. W. White.

THE VICTORIA CROSS.

The Victoria Cross has been awarded to Captain F. A. C. Scrimger, Canadian Army Medical Service, Medical Officer, 14th Battalion, Royal Montreal Regiment, for directing, on April 25th, near Ypres, under heavy fire, the removal of the wounded and himself carrying a severely wounded officer out of a stable to a place of greater safety, and remaining with him under fire till help could be obtained. During the very heavy fighting between April 22nd and 25th Captain Scrimger displayed continuously day and night the greatest devotion to duty among the wounded at the front.

COMPENSATIONS AND PENSIONS FOR MILITARY MEDICAL OFFICERS.

We stated last week, in response to many inquiries, that the compensation for injury and pensions for widows and children and other compassionate allowances during the present war were the same for Special Reserve, Territorial, and temporarily commissioned officers as for permanent officers of the Royal Army Medical Corps. We now put them before our readers in tabular form:—

Pensions and Gratuities to Wounded Officers (under the rank of Colonel) of the Regular Army, the Special Reserve of Officers, and the Territorial Force, and to Officers holding only Temporary Commissions for the Purposes of the Present War.

—	Wounds and injuries received in action or on flying duty.		Wounds and injuries received on duty otherwise than in action or on flying duty.	
	1	2	3	4
Rank of officer (i.e., permanent rank unless the officer holds only temporary rank)	Gratuity for "very severe" injury, to be followed by pension (col. 2) if effects are permanent.	Pension for "very severe and permanent" injury following gratuity (col. 1).	Gratuity for "severe and permanent" injury (no pension).	Pension for "very serious and permanent" injury (no gratuity).
Lieutenant-Colonel ...	* From £112 10s. to £450.	† From £150 to £300 a year.	* From £112 10s. to £450.	† From £120 to £250 a year.
Major	From £75 to £300.	From £100 to £200 a year.	From £75 to £300.	From £80 to £150 a year.
Captain ...	From £52 10s. to £250.	From £50 to £100 a year.	From £62 10s. to £250.	From £40 to £75 a year.
Lieutenant	From £35 to £140.	From £35 to £70 a year.	From £35 to £140.	From £30 to £50 a year.
Second Lieutenant	From £25 to £100.	From £35 to £70 a year.	From £25 to £100.	From £30 to £50 a year.

* The amount of gratuity depends upon the period for which the officer is disabled by his wound or injury for the performance of military duty.

† The rate of pension is governed by the degree of severity of the wound or injury.

Artificial appliances are supplied at the public expense to officers who have lost a limb, an eye, &c., through wounds or injuries received *in action or on flying duty*.

Pensions on Cessation of Service to Officers (as above) Disabled by Wounds, Injuries, or Disease Received or Contracted on War Service.

Officers medically certified to be disabled either wholly or partially for earning a livelihood on the cessation of their service through wounds, injuries, or disease received or contracted on war service may be granted pensions varying from 3*s.* a day to £200 a year according to circumstances. Such pension is additional to any wound pension or gratuity for which an officer may be eligible. (Officers of the Regular Army may be eligible for higher rates under the provisions of the Pay Warrant.)

Applications for wound pensions, &c., should be addressed to the Secretary, War Office, Whitehall, S.W.

Pensions to the Families of Officers (under the Rank of Colonel) of the Regular Army, the Special Reserve of Officers, and the Territorial Force, and to the Families of Officers holding only Temporary Commissions for the Purposes of the Present War.

Widows and children.	*Class A.* Families of officers killed in action or dying of wounds received in action within seven years after having been wounded.				*Class B.* Families of officers dying from disease caused by fatigue, privation, or exposure incident to active operations in the field or from wounds or injuries sustained on duty (not in action) within seven years after removal from duty for the disease or injury.	
Rank of officer (i.e., permanent rank, unless the officer holds *only* temporary rank).	Pension to widow (during widowhood).	Compassionate allowance for each child (sons till 18, unmarried daughters till 21).	Gratuity in addition to pension, &c.		Pension to widow (during widowhood).	Compassionate allowance for each child (sons till 18, unmarried daughters till 21). (No gratuity is payable in *these cases*.)
	Yearly.	Yearly.	Widow.	Each child.	Yearly.	Yearly.
	£	£	£	£ *s.* *d.*	£	£ *s.* *d.*
Lieut.-Col.	180	24	450	150 0 0	153	20 0 0
Major ...	140	21	300	100 0 0	105	17 10 0
Captain ...	100	18	250	83 6 8	75	15 0 0
Lieut. ...	80	15	140	46 13 4	60	12 10 0
2nd Lieut.	80	15	100	33 6 8	60	12 10 0

Twice the above rates of compassionate allowance may be granted to motherless children. If an officer (Class A) leaves a *daughter only* (unmarried and under 21) she may be granted, in lieu of the above rates, a special allowance varying from £40 to £90 a year according to rank. These awards are in addition to the gratuity.

If an officer (Class A) leaves neither a widow nor legitimate child, his mother, if a widow without other pension or adequate provision, may be granted a special pension varying from £40 to £90 a year according to rank, provided that she had been mainly dependent on the officer.

If an officer (Class A) leaves neither widow, legitimate child, parent, nor brother a similar pension may be granted to his sister, or sisters jointly, if unmarried, subject to the above proviso.

All applications for the grant of pensions, as above, should be addressed to the Secretary, War Office, Whitehall, S.W.

THE SCOTTISH MEDICAL SERVICE EMERGENCY COMMITTEE.

This strongly constituted committee comprises: The President of the Royal College of Physicians of Edinburgh; the President of the Royal College of Surgeons of Edinburgh; the President of the Royal Faculty of Physicians and Surgeons of Glasgow; the Dean of the Faculty of Medicine, University of Edinburgh; the Dean of the Faculty of Medicine, University of Glasgow; the Dean of the Faculty of Medicine, University of Aberdeen; the Dean of the Faculty of Medicine, University of St. Andrews; Dr. John Adams (Glasgow); Dr. G. C. Anderson (Methil); Dr. J. R. Currie (Edinburgh); Dr. John Gordon (Aberdeen); Dr. J. R. Hamilton (Hawick); Dr. John C. M'Vail (Edinburgh); Dr. John Playfair (Edinburgh); and Dr. John Stevens (Edinburgh). Dr. Norman Walker, the treasurer of the Royal College of Physicians of Edinburgh, is acting as convener, and Mr. T. H. Graham as secretary.

Dr. Norman Walker has issued through the secretaries of the divisions of the British Medical

Association three schedules or forms to be distributed to medical men, so that the Emergency Committee may be able to ascertain how far the numbers of medical men in any given area have already been reduced, and may thus be in a position to estimate what further depletion would be involved by additional offers of whole-time service. The Emergency Committee does not propose to deal with offers of part-time service at all.

The first form, Schedule A, asks for particulars concerning all medical practitioners in the given area who had been accepted for service before June 15th, 1915, and takes cognizance of those who are already engaged in part-time service.

Schedule B, dealing only with whole-time appointments, is addressed to practitioners who before June 15th had applied for a whole-time service. On this form the practitioner is asked to state whether he is over or under 40 years of age, whether his application was sent in before or after May 15th, and what was his medical work at the time of application—i.e., general practitioner, surgeon or other specialist, medical officer of health, school medical officer, or hospital resident.

Schedule C is addressed to practitioners who on June 15th had not applied for service, whole-time service alone being considered, but who are ready to do so if suitable arrangements can be made. The same information as to age and previous medical experience is required by the form.

We hope that the efforts of the Scottish Medical Service Emergency Committee to coördinate and organise medical service for military purposes will prove successful, for they have certainly been, and continue to be, of a very practical sort; and we are sure that the committee will be able to rely on the help of the British Medical Association, whose divisions make convenient centres for local activity. The convener lays great stress upon the rapid return to him at the Royal College of Physicians of Edinburgh of the filled-up schedules, substantially accurate information being required at once.

THE HEALTH OF PRISONERS IN RUHLEBEN.

The following letter, dated June 14th, has been received this week from a member of our staff who is interned at Ruhleben:—

A fellow prisoner received to-day in a letter a cutting from an English newspaper, undated, reporting an interview with some of the men released from here, on having reached the age limit, on June 6th. The interview is said to have taken place during a stay in Rotterdam on the home journey. After various remarks about the prisoners' camps and the food the released man is credited with the statement that "50 cases of small-pox have occurred in the camps." As the fact of the internment is of itself a sufficient cause of anxiety to relatives at home, I think it is wrong to spread an unfounded statement of this kind. Let those who are lucky enough to be released stick to the truth; it is absolutely superfluous to embellish it by drawing on the imagination. I can assure you that not a single case of small-pox has occurred in the camps; the suggestion has not even circulated as a camp rumour. During the past weeks some cases of German measles have occurred; the sufferers were at once isolated and underwent treatment in the lazaretto; at the same time we were supplied with a solution of lysoform with which to disinfect our compartments, clothing, and bedding. During the past fortnight all the compartments in the stables which form our prison have been whitewashed, while a large number of men are being cleared out of the lofts and transferred to new wooden barracks. On the whole, in my opinion, the general health of the camp is very good, and we keep up our spirits by forms of athletic sport and varied entertainments. I am glad to say that I am in the best of health, and am busy the greater part of the day on behalf of my fellow prisoners.

We saw the communication to which our correspondent alludes, and can well believe that it added to the anxiety of those who had relatives interned as prisoners at Ruhleben. It happens to be very unlikely that an outbreak should have occurred and remain unknown to our correspondent.

ROYAL ARMY MEDICAL CORPS AND COMBATANT MEDICAL MEN.

Medical men at present serving as combatant officers or in the ranks may now be permitted to be transferred to the Royal Army Medical Corps on application made through their commanding officers.

Mr. Charters Symonds, consulting surgeon to Guy's Hospital, has been appointed a consulting surgeon to H.M.'s Forces in Malta, with the temporary rank of Colonel, A.M.S.

THE RED CROSS SOCIETY AND THE ORDER OF ST. JOHN.—A meeting was held at the Mansion House on June 16th in support of the Lord Mayor's special appeal on behalf of the funds of the Red Cross Society and the Order of St. John, the Lord Mayor being in the chair. The Lord Mayor spoke warmly of the work done during the past ten months, and highly commended the devoted services of the surgeons, nurses, orderlies, and voluntary aid detachments. The immediate problem was how to collect the large amounts still necessary for the carrying on of the work. During the last few weeks Sir Edward Clarke, Sir Benjamin Franklin, and Sir Frederick Treves had been canvassing City houses for subscriptions with excellent results. The Marquis of Lansdowne, who has succeeded the late Lord Rothschild (a name, as he pointed out, not likely to be forgotten in the City of London) as chairman of the council of the Red Cross Society, in proposing a resolution expressing sympathy with, and pledging support for, the Lord Mayor's appeal, approved the wisdom of the course adopted by the Red Cross Society and the Order of St. John in setting up a joint committee, which now meets regularly and conducts with perfect harmony the joint work of the two societies, thus effecting a great economy in both finances and effort. They found themselves called on to make a far greater effort than any that could have been expected, one which must be commensurate with the dimensions of a war waged with intensity, by unexampled numbers, and by methods abhorrent to all ideas of civilisation and humanity. Describing the society's work, Lord Lansdowne pointed out that they had to take care, not only of soldiers, but of sailors, and to come to the help of other countries stricken not only with injuries but with disease. Stores had been sent to East Africa, the Cameroons, Rhodesia, and China—in fact, all over the world. They had established great base hospitals at home and abroad, including the hospital for Indian soldiers in the New Forest; also some 900 auxiliary home hospitals and convalescent homes in private residences. He paid a strong tribute to the surgeons and nurses, many of whom were helping at great personal sacrifice, and emphasised the good relations maintained throughout with the Royal Army Medical Corps, largely due to the recognition of the fact that the society's operations must be kept subsidiary to those of the army, to which they were proud to serve as auxiliaries. They were endeavouring also to mitigate the lot of those unhappy ones who had been deprived of sight, and to aid in tracing the missing and wounded. He acknowledged the substantial financial aid which, in addition to the splendid services of their sons, had been rendered by the great dominions, Canada in Flanders, and Australia and New Zealand in Gallipoli. Australia alone had sent £100,000, besides shipments in kind. He specially mentioned the munificent gift of Mr. W. W. Astor of £20,000—the second of that amount. Mr. Arthur Stanley, M.P., in seconding the motion, cited two instances to show how admirably the work was done. One evening an order was received at 6 P.M. for 20,000 articles, all of which

were purchased, packed, and despatched and on their way by 10 A.M. next morning. One Sunday morning the War Office informed them that a hospital was urgently required in Calais, which for valid reasons the R.A.M.C. were not in a position to supply. At 5.30 that evening a special train left Victoria carrying with it the full personnel, 120 beds, a large amount of stores, and motors and ambulances. Sir Robert Hudson showed how unnecessary expense in working was avoided, and Sir Arthur Lawley how comforts were provided near the firing line which the Royal Army Medical Corps could not be expected to provide, and how thousands of lives had been saved by the facilities for rapid transport afforded by their motors. Mr. Herbert Gibbs, Sir Dyce Duckworth, and Sir Edward Clarke also spoke. The resolution was carried. Donations varying from £20,000 to £50, and amounting to £87,455, were announced.

ROYAL NAVAL HOSPITAL, HASLAR.—A new wing is being built to the Royal Naval Hospital at Haslar out of the sum of £50,000 raised at the beginning of the war by the women of Canada and placed at the disposal of the Imperial Government. The operations in the Dardanelles have taxed the hospital's capacity to the utmost, so that the 250 additional beds which the new wing will accommodate will be of the greatest immediate utility. The new building of three floors will be isolated from the main one and will be entirely self-contained. It is expected to be completed by the end of the year.

WOUNDED ALLIES RELIEF COMMITTEE.—The committee, in conjunction with the British Registrar-General, has compiled an official register of Belgian soldiers who have been in hospital in England and of those interned in Holland and imprisoned in Germany. By this means many thousands of soldiers have been brought in touch with their families, and the register has solved some difficult cases of identity. The committee is eager to assist private persons, hospitals, or other institutions in need of information about Belgian soldiers or their families. All applications should be addressed to the committee's offices at Sardinia House, Kingsway, W.C.

The committee's typhus hospital units, which left England on June 3rd for Montenegro, are to be stationed at Podgoritza and Nikshich. Each unit consists of 100 beds, with full equipment for both surgical and fever work.

VACANCIES FOR MEDICAL OFFICERS.—We are asked to state that there are vacancies for five medical officers prepared to serve abroad in the 2nd and 3rd Line Welsh Border Mounted Brigade Field Ambulance. Pay and allowances as in the Regular Army, together with outfit and camp kit grants. Full particulars can be obtained on application to the Officer Commanding, 2nd Line Welsh Border Mounted Brigade F.A., Lambton Park Camp, co. Durham.

A NEW HOSPITAL FOR WOUNDED OFFICERS.—On June 18th General Sir O'Moore Creagh opened the new Prince of Wales's Hospital for Wounded Officers at Staines. The hospital is the gift of the Maharaja Jam Sahib of Nawanagar (whom most people will more readily recognise under the well-known name of "Ranji," the Indian cricketer). It is established in his residence at Staines, "Jamnagar," and the cost of maintenance is undertaken by himself in conjunction with the Maharaja of Kashmir and the Maharaja of Patiala.

FLEET-SURGEON LOUIS GREIG.—Mr. Kenneth Campbell, F.R.C.S., writes to us to call attention to the fact that Fleet-Surgeon Louis Greig, the famous Scottish International half-back, who took part in the Antwerp expedition, being an athlete could without difficulty have escaped into Holland with the others, but being also a surgeon his sense of duty impelled him to remain with the wounded. He is now a prisoner of war at Halle, and Mr. Campbell writes in the hope that as Fleet-Surgeon Greig is so well known some person of influence may exert himself on his behalf. It will be noted in our Parliamentary columns that in answer to a question in the House of Commons on June 17th, Lord Robert Cecil stated that an agreement had been come to by the respective countries permitting the exchange of German and British military medical officers, and that it would become operative as soon as the status of the medical personnel could be definitely settled.

PRESENTATION OF A MOTOR AMBULANCE.—On June 18th a motor ambulance, fitted up with improvements suggested by Colonel H. J. Mackay, assistant director of medical services, Wessex division, was presented by the medical men of the administrative county of Devon to the Devonshire Regiment. There were over 80 subscribers, and the ambulance, after being tested by the Royal Army Medical Corps at Woodbury Camp, Devon, will be available for service "at the front."

CORNISH MEDICAL MEN AND MILITARY SERVICE.—At a meeting held recently at St. Austell, Cornwall, to consider the appeal for an increased number of medical men for the Royal Army Medical Corps, it was resolved to call upon all medical men who were of eligible age to offer their services, and a committee was appointed to organise a scheme for carrying on the practices of those who volunteer for service. Some discussion took place in reference to the granting of medical prescription books to the dependents of soldiers and sailors who are serving, and it was decided to urge the local relief committee to exercise more care in their distribution, so as to prevent abuse of gratuitous medical services.

FREE PHYSICAL TRAINING FOR THE REJECTED.—Persons of military age who, being desirous of enlisting, have presented themselves and been rejected on the ground of deficient physical development, can now obtain, if they so desire, a month's course of physical training gratis at the Central Y.M.C.A. in the Tottenham Court-road, where owing to increased facilities 1000 applicants a month can be dealt with.

A FUND is being raised by a committee, of which the honorary treasurer is Sir Laurence Gomme, to establish and maintain a fleet of motor ambulances in Italy.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Medicines and Immature Spirit.

IN the course of the consideration of the Finance Bill in committee of the House of Commons on June 16th Mr. GLYN-JONES raised the question of the authority that was to be entrusted with the function of determining in what cases the additional duty on immature spirit was to be remitted because it was used in medicinal preparations. He suggested that this function should be discharged by an advisory body "representing medicine, pharmacy, and the Commissioners of Customs and Excise." The CHANCELLOR of the EXCHEQUER took objection to appointing a statutory body, but he promised to set up "a properly qualified medical body to advise the Commissioners of Customs and Excise what preparations may properly be described as medical preparations." This body, of course, will not owe its existence to statutory authority.

Duty-free Spirits for Hospital Tinctures.

The CHANCELLOR of the EXCHEQUER has given notice of a new clause, which he will move to insert in the Finance (No. 2) Bill, giving power to authorise the use of duty-free spirits in hospitals in the preparation of tinctures. The proposed new clause is in the following terms:—"(1) Section eight of the Finance Act, 1902 (which gives power to authorise the use of spirits without payment of duty in arts and manufactures), shall apply to the preparation in a public hospital of tinctures and other articles to be used for medical purposes in the hospital as it applies to arts or manufactures in which the use of spirits is required. (2) If the treasurer or other responsible officer of a public hospital shows, to the satisfaction of the Commissioners of Customs and Excise, that any tinctures or other articles which contain spirits or in the preparation or manufacture of which spirits were used have within the preceding six months been used for medical purposes in the hospital, he shall be entitled to obtain from the Commissioners repayment of any duty paid in respect of the spirits contained in or used in the preparation or manufacture of the said tinctures or other articles. If any person, for the purpose of obtaining any repayment under the foregoing provision, knowingly makes any false statement or false representation he shall be liable, on summary conviction, to imprisonment, with or without hard labour, for a term not exceeding six months. (3) For the purpose of the foregoing provision the expression 'public hospital' means a hospital supported by any public authority or wholly or partly out of any public or charitable funds or by voluntary subscriptions."

HOUSE OF COMMONS.

THURSDAY, JUNE 17TH.

Exchange of British and German Medical Officers.

Mr. PARTINGTON asked the Under Secretary for Foreign Affairs whether an agreement had been reached regarding the exchange of British and German military medical officers.—Lord ROBERT CECIL wrote in reply: The answer is in the affirmative, and it is hoped that the agreement will shortly be made effective. Some delay has been caused owing to the necessity for the military authorities to determine exactly the members of the British and German military medical personnel who are entitled to be exchanged.

Navy Medical Appointments.

Commander BELLAIRS asked the Secretary to the Admiralty whether the Board could see their way to increasing the remuneration given to the members of the medical profession who were appointed as naval surgeon and agent in different districts, having regard to the alterations of conditions which the war had caused since the terms were framed.—Mr. MACNAMARA answered: No reason is seen for increasing the emoluments of these posts which can always be satisfactorily filled upon the present terms, which, with a few exceptions, being based on fees for services rendered, are elastic enough to ensure that additional services during the war are recognised by additional remuneration.

Antityphoid Inoculation.

Replying to Mr. CHANCELLOR in regard to the question of antityphoid inoculation in the army, Mr. TENNANT (Under Secretary for War) said that the circular of the Research Defence Society had War Office sanction and authority and no reason was seen for withdrawing such authority.

Royal Army Medical Corps (Territorial Force).

Mr. EVELYN CECIL asked the Under Secretary for War whether officers or men of the Royal Army Medical Corps, Territorial Force, who had signed A. F. E. 624 A were liable to be transferred to combatant units; and, if so, whether it was the intention of the War Office to transfer officers and men originally enlisted in the Royal Army Medical Corps to the artillery or infantry without their further express consent.—Mr. TENNANT answered: Yes, sir; but the signing of the form is not compulsory, and if it is signed the consent of the officer or man will have been obtained. That is the purpose of the form.

Respirators for Service in the Dardanelles Operations.

Mr. G. GREENWOOD asked the Under Secretary for War whether all possible steps had been taken to provide the troops in the Gallipoli Peninsula with respirators and all other appliances to enable them successfully to resist attempts to poison them by means of noxious gases.—Mr. TENNANT replied: Yes, sir.

Infantile Mortality and Legislation.

Sir GEORGE TOULMIN asked the Prime Minister when the Bill amending the Notification of Births Act, foreshadowed by the President of the Local Government Board, would be introduced.—Mr. ASQUITH replied: I regret that I can as yet give no date when this Bill will be proceeded with.

Mr. ANDERSON asked the President of the Local Government Board whether the increase in the rate in infantile mortality was partly or largely due to the shortage of doctors and nurses, the increased industrial employment of working women, and the absence of suitable agencies and centres for child welfare; whether he would arrange, in addition to the promised legislation, to utilise the services of some proportion of the 80,000 women who had enrolled themselves for national work, with a view to establishing centres for the care of infants and so mitigating an evil which the country could not afford at any time, least of all at present.—Mr. LONG answered: I am advised that the recent increase in mortality amongst young children has been mainly due to measles and its sequelæ. I am hoping to introduce a Bill very shortly to facilitate the establishment of centres for the care of mothers and infants.

Mr. KING asked the President of the Local Government Board how many children under the age of 1 year, of or over the age of 1 year and under 2 years, of or over the age of 2 years and under the age of 3 years respectively died in England and Wales during the six months immediately preceding April 1st, 1915, and what were the numbers of such children so dying during the corresponding periods 1913-14, 1912-13, and 1911-12.—Mr. LONG wrote in reply: The number of deaths of children under the age of 1 year in England and Wales during the six months immediately preceding April 1st, 1915, was 50,209. During the corresponding periods of 1913-14, 1912-13, and 1911-12 the numbers were 49,029, 47,357, and 48,944 respectively. The number of deaths of children between 1 and 2 and between 2 and 3 years old cannot yet be given for the six months immediately preceding April 1st, 1915.

Mr. KING asked the Secretary for Scotland how many children under the age of 1 year, of or over the age of 1 year and under the age of 2 years, of or over the age of 2 years and under the age of 3 years, respectively, died in Scotland during the six months immediately preceding April 1st, 1915; and what were the numbers of such children so dying during the corresponding periods 1913-14, 1912-13, and 1911-12.—Mr. MCKINNON WOOD (in a written answer) replied: The numbers of deaths of children aged 1 and 2 years are not available in portions of years. The following are the numbers of deaths of children of less than one year old in periods named:—

Oct. 1st, 1911, to March 31st,	1912	... ...	7234
,, 1912, ,,	1913	... ...	7509
,, 1913, ,,	1914	... ...	7228
,, 1914, ,,	1915	... ...	8276

Mr. KING asked the Chief Secretary to the Lord Lieutenant of Ireland how many children under the age of 1 year, of or over the age of 1 year and under the age of 2 years, of or over the age of 2 years and under the age of 3 years, respectively, died in Ireland during the six months immediately preceding April 1st, 1915, and what were the numbers of such children so dying during the corresponding periods 1913-14, 1912-13, and 1911-12.—Mr. BIRRELL wrote in reply: The following table sets out for Ireland the numbers of deaths of infants under 1 year of age, at 1 and under 2, and at 2 and under 3 registered (1) during the six months ended March 31st, 1912, 1913, and 1914, and (2) during the quarter ended Dec. 31st, 1914. The unrevised figures of deaths of infants under 1 year of age registered during the quarter ended March 31st, 1915, are also shown, but the corresponding figures for infants between 1 and 3 years are not available.

Period.	Number of deaths registered at ages of—		
	Under 1 year.	1 and under 2 years.	2 and under 3 years.
Six months ended March 31st, 1912	4,996	1,276	636
,, ,, ,, 1913	4,835	1,301	651
,, ,, ,, 1914	4,612	1,214	600
Three months ended Dec. 31st, 1914	2,046	487	289
,, ,, ,, March 31st, 1915	2,829	—	—

Belgians in Lunatic Asylums.

Mr. LEIF JONES asked the President of the Local Government Board whether there was any public fund available to pay for the maintenance of Belgian refugees who had had to be sent to county lunatic asylums in this country so that the local rates might not be burdened with this national charge.—Mr. LONG answered: The Local Government Board has the authority of the Treasury to pay for the treatment of refugees in lunatic asylums, and in a certain number of cases have already agreed to make payments of this character.

Mr. LEIF JONES: Will payments which have already been made by the local authority be refunded by the Local Government Board?—Mr. Long: Certainly.

Treatment of Mental Strain in Soldiers.

In the course of the debate in Committee of Supply on the Home Office vote, Mr. RENDALL called attention to the institutions in which soldiers suffering from mental strain were being treated. He said that it was a calamity that men returning from the front with their mental balance temporarily deranged should be placed under the control of the War Office. The War Office was getting hold of various asylums which he should have thought were under the control of the Home Office. The men were put into these so-called hospitals, which were really asylums, and under the control of medical men who had been attached to these asylums. The soldiers in these cases ought to be under the treatment and control of first-rate general practitioners and not under the control of the Lunacy Acts. Some new proposal ought to be formulated by the Home Office for dealing with these soldiers.

Mr. BRACE (Under Secretary for the Home Department) said: A question which has been raised in this debate is that of the men who have lost their reason in consequence of the hardships of this war, and the Government were criticised because the War Office has been selected as the authority for looking after these afflicted people. It is thought both by the Home Office and by the War Office that that is the better arrangement. If the soldiers who lost their reason in consequence of the hardships of the war were put in the ordinary asylums of the country it would, in the judgment of those who have a right to speak on this matter, be one of those experiences for which the soldiers after their recovery would not thank the nation. The army authorities have

much greater latitude in regard to this matter, for they can send the men to hospitals, and when cured they will come out without any of the stigma which might attach to them if they had been confined in any of the asylums of the land. On the whole, the weight of argument is distinctly in favour of allowing the War Department to deal with these unhappy cases, and we ask honourable Members to agree with us that that is the best way of dealing with them.

MONDAY, JUNE 21ST.

Medical Students and War Service.

Sir PHILIP MAGNUS asked the Under Secretary for War whether, having regard to the fact that many of the younger university medical students of military age had been reproached for not having joined the forces of the Crown, he would state whether it was considered preferable that such students in their first or second year should accept some military position or should continue their medical studies with a view to qualification.—Mr. TENNANT replied: I am not aware of the reproaches to which the honourable Member refers. It is clear that if students in their first or second year join the combatant ranks in very large numbers there will probably be for some years after the war a serious scarcity of doctors. Any expression, therefore, of official opinion which might seem to place on them the obligation of taking up immediate military duty would hardly be in the interests either of the army or of the community as a whole.

The Health of the Expeditionary Forces.

Mr. KING asked the Under Secretary for War whether he would give some information or figures to show the prevalence of sickness in the armies at home and on active service during the war, and particularly state whether the health of the forces compared favourably with health conditions in previous wars.—Mr. TENNANT answered: I will give information, not figures. As far as important preventable diseases are concerned, the health of the Expeditionary Forces compares not only favourably with the health conditions of any previous campaign, but nothing approaching it has ever been known in the past.

TUESDAY, JUNE 22ND.

Milk and Dairies Act Postponement Bill.

Mr. HAYES FISHER moved the second reading of the Milk and Dairies Postponement Act. He said that last year two useful measures, the Milk and Dairies Act and the Milk and Dairies (Scotland) Act had been passed for the purpose of improving the milk-supplies of the country. The present Bill proposed to postpone the date on which these measures should come into operation until one year after the termination of the war, but it was provided that they might be brought into operation earlier by Orders of the Local Government Board, if that course proved feasible. The Acts in question were designed to prevent the sale of tuberculous milk, or milk exposed to contamination or dirt, or adulterated milk. More stringent regulations were imposed on the milk industry, and also more detailed and systematic inspection was required. That made for more expense. Furthermore, it was extremely difficult at present to add to the number of veterinary surgeons. It would be necessary under the Bill also to enlarge the staffs of the local authorities, but these staffs were very much depleted. More supervision on the part of the medical officers of health would also be required, but they were otherwise engaged at present. If the two Acts were not postponed it would seriously embarrass the local authorities.

Mr. RENDALL regarded the postponement of the two measures as deplorable.

Mr. DENNISS also regretted the necessity for postponement, as the question of milk-supply had a most important bearing on the question of infant mortality. He thought that medical men could have been obtained to deal with tuberculous milk and questions of sanitation.

Sir GEORGE TOULMIN recognised that there was no alternative to the postponement of the operation of the Acts owing to the administrative difficulties involved in putting them into force. He hoped that the Local Government Board would make up for the postponement later on, by the strict enforcement of the provisions when they did come into operation.

The Bill was read a second time.

BOOKS, ETC., RECEIVED.

ÉCOLE DE MÉDICINE TROPICALE, Junqueira, Lisbon.
Arquivos de Higiene e Patologia Exóticas. Vol. V.

FARRELL, C. P., 117, East Twenty-first-street, New York.
An Ethical Problem, or Sidelights upon Scientific Experimentation on Man and Animals. By Albert Leffingwell, M.D.

FROWDE, HENRY, AND HODDER AND STOUGHTON, London.
X Rays and How to Produce and Interpret Them. By Harold Mowat, M.D. Edin., Temporary Lieutenant, R.A.M.C. Price 8s. 6d. net.

GOVERNMENT PRINTING OFFICE, Washington.
Index Catalogue of the Library of the Surgeon-General's Office U.S. Army. Second series. Vol. XIX.–U to Uzielli. Price $2.00.

GREEN, W., AND SON, Edinburgh and London.
Simple Methods of Radiographic Localisation. By Thomas Rankine. Price 1s. net.

KNAPP, DREWETT, AND SONS, Victoria-street, Westminster.
Symbiogenesis: The Universal Law of Progressive Evolution. By H. Reinheimer. Price 10s. 6d. net.

LEWIS, H. K., London.
Materia Medica and Pharmacy for Medical Students, with an Appendix on Incompatibility. By Reginald R. Bennett, B.Sc. Lond., F.I.C. Third edition. Price 4s. 6d. net.
Amœbiasis and the Dysenteries. By Llewellyn Powell Phillips, M.A., M.D. Cantab., F.R.C.P. Lond., F.R.C.S. Eng., Professor of Medicine in the Egyptian Government School of Medicine, Cairo. Price 6s. 6d. net.

LIPPINCOTT, J. B., COMPANY, Philadelphia.
Diabetes Mellitus: Designed for the Use of Practitioners of Medicine. By Nellis B. Foster, M.D.
Nursing and Care of the Nervous and the Insane, by Charles K. Mills, M.D. Third edition, revised. By N. S. Yawger, M.D. Price 5s. net.

LONGMANS, GREEN, AND CO., London, New York, and Bombay.
Elements of Optics for the Use of Schools and Colleges. By George W. Parker, M.A. Price 2s. 6d.
Clinical Anatomy of the Gastro-Intestinal Tract. By T. Wingate Todd, M.B., Ch.B., F.R.C.S. Eng. Price 6s. net.

PUTNAM'S, G. P., SONS, London and New York.
John Shaw Billings: A Memoir by Fielding H. Garrison, M.D. Price 10s. 6d. net.

SIMPKIN, MARSHALL, HAMILTON, KENT, AND CO., LIMITED.
The Cure of Self-Consciousness. By James Alexander. Price 3s. 6d. net.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ADAMS, ALFRED, M.B., B.Ch. Oxon., M.R.C.S., has been appointed Acting Deputy Medical Officer for the Second District by the Liskeard (Cornwall) Board of Guardians.

BAIRD, W. J., M.B., Ch.B. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Earls Barton District of the county of Northampton.

BALLANTYNE, ARTHUR J., M.D. Glasg., has been appointed Honorary Consulting Ophthalmic Surgeon to the Glasgow Royal Maternity and Women's Hospital.

BARKES, W., M.D. Durh., has been appointed Medical Officer of Health by the Houghton-le-Spring Urban District Council, and Certifying Surgeon under the Factory and Workshop Acts for the Houghton-le-Spring District of the county of Durham.

BARRY, W. J. M., M.D. Durh. & Brux., F.R.C.P. Edin., has been appointed Honorary Consulting Physician to the Royal Hamadryad Seamen's Hospital.

CHAMBERLAIN, EDWARD BEATTY, M.R.C.S., L.S.A., has been appointed Acting Deputy Medical Officer for the Third District by the Liskeard (Cornwall) Board of Guardians.

COOMBE, RUSSELL, F.R.C.S. Eng., has been appointed Consulting Surgeon to the Axminster Cottage Hospital.

DONALD, JOHN, M.D., C.M. Glasg., D.P.H. Camb., has been reappointed Medical Officer for the Sixth District by the Liskeard (Cornwall) Board of Guardians.

FORTY, DANIEL HERBERT, M.R.C.S., L.R.C.P. Lond., has been appointed Acting Medical Officer for the Charfield District by the Thornbury (Gloucestershire) Board of Guardians.

HILLYER, W. W., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Aberavon District of the county of Glamorgan.

LAIRD, D. C., M.B., C.M. Glasg., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Milngavie District of the county of Dumbarton.

LANGRAN, WILLIAM, L.R.C.P. & S., L.M. Edin., L.A.H. Dub., has been appointed Medical Officer to the Axminster Cottage Hospital.

MAY, R. J., L.R.C.P. & S. Irel., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Swords District of the county of Dublin.

MENCE, WILLIAM CHARLES, L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer to the Axminster Cottage Hospital.

ORMSBY, G. H., L.S.A., L.M.S.S.A. Lond., has been appointed Medical Officer of Health to the Standish Urban District Council.

PADBURY, GEORGE JOHN, M.B. Lond., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer to the Axminster (Devon) Cottage Hospital.

RIORDAN, W., L.R.C.S. Irel., L.K.Q.C.P. Irel., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Dripsey District of the county of Cork.

SEAL, PHILIP HENRY, M.B., B.S. Lond., M.R.C.S., L.R.C.P. Lond., has been appointed Medical Officer to the Children's Home by the South Molton (Devon) Board of Guardians.

SELFE, J., L.R.C.P. Lond., M.R.C.S., D.P.H., has been appointed Medical Officer of Health for Scarborough.

SEPHTON, R. B., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg., has been appointed Temporary Medical Officer of Health to the Warrington Rural District Council.

STIRK, PERCY HERBERT, M.R.C.S., L.R.C.P., D.P.H. Lond., has been appointed Acting Deputy Medical Officer of Health for the St. Thomas (Exeter) Rural District Council.

TRESIDDER, WILLIAM ELLIOT, M.B., B.S. Lond., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer to the Scattered Homes for Children by the St. Germans (Cornwall) Board of Guardians.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BEDFORDSHIRE COUNTY COUNCIL.—Temporary School Medical Officer. Salary £300 per annum.

BIRKENHEAD BOROUGH HOSPITAL.—House Surgeon. Salary £300 per annum, with board and laundry.

BIRMINGHAM GENERAL DISPENSARY.—Resident Medical Officer, unmarried. Salary £250 per annum, with apartments, attendance, &c.

BIRMINGHAM AND MIDLAND EYE HOSPITAL.—Junior House Surgeon. Salary £100 per annum, with residence, board, &c.

BOLTON INFIRMARY AND DISPENSARY.—Senior House Surgeon. Salary £230 per annum, with apartments, board, and attendance.

BRISTOL, COSSHAM MEMORIAL HOSPITAL, Kingswood.—House Surgeon. Salary £150 per annum, with board, residence, and laundry.

BRISTOL GENERAL HOSPITAL.—House Physician for six months. Salary at rate of £150 per annum, with board, residence, &c.

BRISTOL ROYAL INFIRMARY.—Assistant to Ear, Throat, and Nose Department.

BURY INFIRMARY.—Senior and Junior House Surgeons. Salary £175 and £150 per annum respectively, with board, residence, and washing.

CAPE HOSPITAL BOARD.—Assistant Medical Officer, unmarried, for Somerset Hospital, Cape Town, or other Hospitals in the Peninsula. Salary £200 per annum, with rations and quarters.

CARLISLE NON-PROVIDENT DISPENSARY.—Resident Medical Officer. Salary £200 per annum, with apartments (not board).

CARSHALTON, SURREY, QUEEN MARY'S HOSPITAL FOR CHILDREN.—Locum Tenens Assistant Medical Officer. Salary £6 6s. per week, with usual residential allowances.

CHESTER COUNTY ASYLUM.—Third Assistant Medical Officer, unmarried. Salary £200 per annum, with board, lodging, and washing.

CIRENCESTER, GLOS., 1ST SOUTH MIDLAND MOUNTED BRIGADE FIELD AMBULANCE.—Two Medical Officers to complete 2nd Line (Territorial).

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—Tuberculosis Officer. Salary at rate of £500 per annum, with lunch and dinner.

COUNTY OF LONDON.—Lecturers in First Aid, Home Nursing, Health, and Infant Care. Salary £1 1s. a lecture.

COVENTRY AND WARWICKSHIRE HOSPITAL.—Third House Surgeon. Salary 6 guineas per week, with board and residence.

CROYDON MENTAL HOSPITAL, Upper Warlingham, Surrey.—Second Assistant Medical Officer. Salary £250 per annum, with board, lodging, and laundry.

FOLKESTONE, ROYAL VICTORIA HOSPITAL.—House Surgeon. Salary as agreed, with board, residence, and laundry.

GREAT MISSENDEN, BUCKS, 3/2ND SOUTH MIDLAND MOUNTED BRIGADE FIELD AMBULANCE.—Transport Medical Officer.

GUILDFORD, ROYAL SURREY COUNTY HOSPITAL.—House Surgeon. Salary £150 per annum, with board, residence, and laundry.

HANTS COUNTY ASYLUM.—Locum Tenens. Salary 5 guineas per week, with apartments, board, washing, and attendance.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—House Physician for six months. Salary 30 guineas. Also Assistant Resident Medical Officer. Salary £100 per annum, with board and residence.

KENT EDUCATION COMMITTEE.—Temporary School Dentist. Salary £250 per annum.

LEAMINGTON SPA, WARNEFORD, LEAMINGTON, AND SOUTH WARWICKSHIRE GENERAL HOSPITAL.—Second Resident Medical Officer. Salary £200 per annum, with board, residence, and laundry.

LEEDS EDUCATION COMMITTEE.—School Dental Officer. Salary £250 to £300 per annum.

LIVERPOOL COUNTY ASYLUM, Rainhill.—Temporary Assistant Medical Officer. Salary £6 6s. per week, with apartments, board, attendance, and washing.

MANCHESTER, COUNTY ASYLUM, Prestwich.—Assistant Medical Officer, unmarried. Salary £250 per annum, with board, apartments, attendance, and washing.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Parkplace, Cheetham Hill-road.—House Surgeon. Salary £120 per annum, with apartments and board.

MARGATE, ROYAL SEA-BATHING HOSPITAL FOR SURGICAL TUBERCULOSIS.—Resident Surgeon. Salary at rate of £150 per annum, with board, residence, and laundry.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W.—Resident Medical Officer for six months. Salary at rate of £80 per annum, with board, residence, and washing.

NEWCASTLE-ON-TYNE, STANNINGTON ASYLUM.—Locum Tenens. Salary 6 guineas per week, with board, &c.

NORTHUMBERLAND COUNTY COUNCIL.—Temporary Clinical Tuberculosis Medical Officer. Salary £500 per annum.

NOTTINGHAM GENERAL HOSPITAL.—Senior House Physician and Assistant House Physician. Salary at rate of £300 and £250 per annum respectively, with board, residence, and laundry.

PAISLEY PAROCHIAL HOSPITAL, LUNATIC WARDS, AND POORHOUSE, Craw-road.—Resident House Surgeon. Salary £230 per annum, with board and apartments.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House Surgeon and House Physician. Salary as arranged, with board, residence, and washing.

PONTYPOOL, URBAN DISTRICT OF ABERSYCHAN.—Medical Officer of Health. Salary £70 per annum.

PUTNEY HOSPITAL (CHESTER BEQUEST), Putney Common, S.W.—Resident Medical Officer. Salary £150 per annum, with residence, board, and laundry.

ST. MARK'S HOSPITAL FOR CANCER, FISTULA, AND OTHER DISEASES OF THE RECTUM, City-road, E.C.—House Surgeon. Salary £100 per annum, with board, lodging, and washing.

ST. MARY'S HOSPITAL FOR WOMEN AND CHILDREN, Plaistow, E.—Assistant Resident Medical Officer. Salary at rate of £90 per annum, with board, residence, and laundry.

ST. MARYLEBONE INFIRMARY, Rackham-street, Notting Hill, W.—First Temporary Resident Assistant Medical Officer, unmarried. Salary at rate of £225 per annum, with apartments, rations, and washing.

SALISBURY GENERAL INFIRMARY.—House Surgeon and Assistant House Surgeon, unmarried. Salary £150 and £100 per annum respectively, with apartments, board, lodging, and washing.

SCARBOROUGH HOSPITAL AND DISPENSARY.—Senior and Junior House Surgeons. Salary £100 and £80 per annum respectively, with board, residence, &c.

SHEFFIELD ROYAL INFIRMARY.—House Surgeon and Assistant House Physician. Salary £100 per annum, with board and residence.

SHEFFIELD, WHARNCLIFFE WAR HOSPITAL, Middlewood-road.—Resident Medical Officers.

SOUTH LONDON HOSPITAL FOR WOMEN, 88-90, Newington-causeway, S.E.—Female Anæsthetist.

STOCKPORT INFIRMARY.—Senior House Surgeon. Salary £200 per annum, with board, washing, and residence.

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TUNBRIDGE WELLS GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £250 per annum, with board, residence, &c.

VENTNOR, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Isle of Wight.—Assistant Resident Medical Officer.

WALSALL AND DISTRICT HOSPITAL.—Assistant House Surgeon and Anæsthetist. Salary £150 per annum, with board, residence, and laundry.

WARRINGTON COUNTY BOROUGH.—Temporary Assistant Medical Officer of Health. Salary £300 per annum.

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WINDSOR, KING EDWARD VII. HOSPITAL.—House Surgeon. Salary £100 per annum, with board, apartments, and washing.

Births, Marriages, and Deaths.

BIRTHS.

BULLOCK.—On June 14th, at Bigwood-road, Hampstead Garden Suburb, Elsa Gye, wife of W. E. Bullock, M.D., R.A.M.C., of a son.

SEYMOUR.—On June 20th, at College Gates, Worcester, the wife of Harold F. Seymour, M.D., of a daughter.

SYMES-THOMPSON.—On June 16th, at Gloucester-place, W., the wife of H. E. Symes-Thompson, M.D., of a son.

WATSON.—On June 20th, at Lancaster-place, N.W., the wife of Major D. P. Watson, R.A.M.C., of a daughter.

MARRIAGES.

ALLAN—WOODS.—On June 19th, at Christ Church, Southgate, London, N., John Allan, M.D. Edin., D.P.H., to Gertrude Buckston Agnes, youngest daughter of Josiah Woods, of London.

ASH—PRYCE JONES.—On June 16th, at St. Mary Magdalene, Bersted, Bognor, Walter Martin Ash, M.B., B.S. Lond., Surgeon, R.N., to Gladys, youngest daughter of Mr. and Mrs. S. R. Pryce Jones, of "Newcourt," Bognor.

BOWDEN—NEVILLE.—On June 17th, at St. John's Church, Bethnal Green, Lieutenant Ellis Campbell Bowden, R.A.M.C., to Dorothy, second daughter of Mr. and Mrs. J. Neville, of Shoreham, and late of "Leaside," Beckenham.

BULSTRODE—WOOLMER WHITE.—On June 14th, at Salle Church, Christopher Victor Bulstrode, M.A., M.D. Cantab., Temporary Captain, R.A.M.C., to Marguerite, elder daughter of Mr. and Mrs. Woolmer White, of Salle, Norfolk, and Southleigh, Hants.

CHAPMAN—WALLROTH.—On June 17th, very quietly, at Sunbury-on-Thames, Donald Poyntz Chapman, Staff-Surgeon, R.N., to Florence Emily, third daughter of Mr. and Mrs. Frederick A. Wallroth, of Sunbury Lodge.

EVANS—RUTHERFORD.—On June 10th, at Dunkeld Cathedral, by the Rev. A. Howell, M.A., assisted by the Rev. W. Brownlie, B.D., A. Edward Evans, M.B., son of the late Edward Evans, C.E., and of Mrs. Evans, 3, Rotherwick Court, Golders Green, to Jessie Dorothy, second daughter of the Rev. T. R. Rutherford, M.A., Minister of Dunkeld.

FOX—ALLEN.—On June 16th, at Spanish-place Church, Manchester-square, London, W., Reginald A. Fox, L.D.S. Eng., D.D.S. Penn., Lieutenant, 2/4th South Lancs. Regiment, to Winnie, only child of the late Squire Winfield Allen, D.D.S., of Queen-street, Edinburgh, and Mrs. Squire Allen, of Edinburgh.

DEATHS.

MACTIER.—On June 19th, at Kinnessburn, St. Andrews, William Fullarton Mactier, M.D., late Bengal Army, in his 93rd year.

MOUILLOT.—On June 20th, at Eton House, Harrogate, Francois Albert de Thierry Mouillot, the dearly beloved husband of Mary Mouillot, in his 56th year. Funeral Wednesday, June 23rd.

WRIGHT.—On June 20th, at Alexandria, Lieutenant Eric Alfred Wright, R.A.M.C., of septic poisoning contracted in attending the wounded, aged 36 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

BEETLES AND RED ANTS AS CHOLERA CARRIERS.

THE danger of the transmission of disease by the domestic fly has been frequently demonstrated and is now generally acknowledged. But there are other domestic pests whose habits have not been so carefully studied. The black-beetle, for instance, conveys the cholera bacillus, at least in tropical climates. A recent issue of the *Philippine Journal of Science* contains an account of experiments made with the *Periplaneta americana* (Linn.), which infests private dwellings at Manila. This insect feeds on all kinds of organic matter, including fæces, and if precautions are not taken will crawl over food intended for human consumption. Some of these beetles were captured and fed on human dejecta containing cholera bacilli. Six hours later the fæces of the beetles were examined and found to contain cholera bacilli. In course of time the number diminished, though in one case bacilli were found 79 hours after the test meal. It would seem that the cholera bacilli do not multiply within the insect; but it is evident that if the fæces of the beetle are deposited on a damp surface the bacilli may live for a long time. One experiment showed that their vitality persisted for an entire day on a lettuce leaf and for 46 hours on an oyster. When experiments were made with guinea-pigs it was evident that the cholera germ had lost none of its virulence after sojourning for a while within the beetle. The red ant, also (*Monomorium latinode*, Mayr), is an omnivorous insect with a distinct liking for human dejecta, but the volume of its fæces is so small that experiments are difficult. Nevertheless, cholera bacilli have been detected in the bodies of red ants eight hours after they had been fed on cholera dejecta.

THE LEEWARD ISLANDS.

A REPORT on the Blue-book of this colony for the year 1913–14 has been received at the Colonial Office from the Governor, Sir H. Hesketh Bell, K.C.M.G. It states that the population at the last Census was 127,193, distributed amongst the islands as follows: Antigua, 31,394; Barbuda, 871; St. Kitts, 26,283; Nevis, 12,945; Anguilla, 4075; Dominica, 33,863; Montserrat, 12,196; Redonda, 4; Virgin Islands, 5562. During the year 3827 patients were admitted into the hospitals of the colony, and there were amongst them 354 deaths. In the central lunatic asylum in Antigua there were at the beginning of the year 129 inmates (70 males and 59 females); 53 were admitted during the year, 27 were discharged as cured, and 27 died. There are two leper asylums—one at Rat Island in Antigua and the other at Fort Charles in St. Kitts. As to the latter no statistics are given, but in Antigua there were 33 lepers at the beginning of the year, 8 were admitted during the year, and 1 died. There is no record in Antigua of any attendant at the asylum having contracted leprosy. The Alexandra Cottage Home for Incurables, Dominica, which is supported partly by voluntary contributions, maintained on an average 10 paupers. The dilapidated and insanitary collection of huts known as "Hyndman's Village" has been removed, and the site has been transformed into an open, clean, and well-drained space free from the possibility of mosquito infection. A model village is being laid out at Clare Hall. The erection and occupancy of seven cottages, provided with ample yard accommodation and each having a neat enclosed garden in front, serve as valuable object-lessons to such villages as appear to be contented with their squalid and overcrowded huts. Until 1913 the residents in St. John's, Antigua, were annually subject to the inconvenience of having their water services restricted, if not actually locked off, for periods of from four to six weeks during the dry months of the year. The erection of a large dam across the Body Pond stream has now obviated this inconvenience, and secures for the city an ample water-supply throughout the year. Much improvement has been effected in the Cunningham Hospital, St. Kitts, and one result is that the general public are now taking much more interest in the institution than was formerly the case. Both in St. Kitts and in Nevis the treatment of yaws by means of salvarsan in special wards continues to be vigorously prosecuted with excellent results. The visit of Dr. R. T. St. John Brooks, the bacteriologist sent out to report on the sanitary state of the ports of the colony with special reference to the dangers of plague, has done much to stimulate interest in sanitary questions and will result, doubtless, in improving existing conditions. Some time, however, must necessarily elapse before effect can be given to all Dr. Brooks's recommendations.

THE ROYAL EARLSWOOD INSTITUTION.

ONE of the distressing accompaniments of the war is the inevitable falling off in financial support that it must entail to many valuable philanthropic and charitable institutions. This is particularly to be regretted in the case of such of them as aim at caring for those who under no circumstances are capable of caring for themselves. A very serious sufferer is the Royal Earlswood Institution for Mental Defectives, which, in consequence of the war, has decided to forgo its annual festival dinner this year—a course which must deprive it of some £2000 of the funds needed for the support of its 500 defective inmates. Such a drop in the income would be serious at any time, but is doubly so when there is such a rise in the cost of the necessaries of life. It is sincerely to be hoped that the appeal which has been put forth by the board for an extra effort to meet this deficiency will not fall on deaf ears, and that subscriptions and donations, made payable to the secretary, Mr. Harry Howard, will be forthcoming to help to maintain the institution in its much needed activity.

P.L.M. TOURIST MOTOR-CARS.

THE Paris, Lyons, and Mediterranean Railway motor-cars, which made their first appearance three or four years ago, are announced to run daily (when not otherwise stated) this summer, between July 1st and Sept. 15th, as follows:—*Route des Alpes:* Briançon and Grenoble, viâ the Lautaret Pass; Grenoble and Aix-les-Bains, through the three passes of La Chartreuse and the Chalet (P.L.M. Restaurant, altitude 6950 feet); Aix-les-Bains and Annecy; Annecy—Le Fayet—St. Gervais-les-Bains and Evian. *Dauphiné:* Grenoble and St. Pierre-de-Chartreuse (out viâ La Placette, home viâ Le Sappey); Grenoble and Villars-de-Lans, viâ the Grands Goulets; Montdauphin—Guillestre and Abriès (horse cars). *Savoie:* Moutiers—Salins and Pralognan; Bourg-St. Maurice and Petit St. Bernard; Bourg-St. Maurice and Val d'Isère. *Jura:* Genève and St. Claude, viâ La Faucille. *Auvergne* (June 1st to Oct. 31st): St. Flour and Chaudesaigues; (June 15th to Sept. 15th): Issoire and Saint-Nectaire (twice daily). A detailed time-table may be obtained on application to the offices of the company, 179, Piccadilly, London, W.

Wanderer.—The selection of Osler's Practice and Pembrey's Pathology should meet the requirements admirably. We would suggest the addition of Essex Wynter's Minor Medicine (1914, second edition, D. Appleton and Co., London), or Leonard Williams's Minor Maladies and their Treatment (Baillière, Tindall, and Cox). For surgery we suggest Lejars' Urgent Surgery, translated by Dickie (1909, Simpkin, Marshall, and Co., price 5*s.* 6*d.* net the two volumes). An exceedingly useful book is the Newer Physiology in Surgical and General Practice, by A. Rendle Short (1914, third edition, John Wright and Sons, Limited, Bristol, price 5*s.* net). For hygiene and sanitation, an admirable little book by Lieutenant-Colonel A. M. Davies, R.A.M.C., is entitled "A Handbook of Hygiene" (1913, fourth edition, Charles Griffin and Co., Limited, London, price 10*s.* 6*d.* net.); also Hygiene and Public Health by Parkes and Kenwood (fourth edition, H. K. Lewis, London, price 12*s.* 6*d.* net).

E. F. has omitted to enclose his name and address.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

METEOROLOGICAL READINGS.

(Taken daily at 9.30 a.m. by Steward's Instruments.)

THE LANCET Office, June 23rd, 1915.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
June 17	30·156	N.E.	...	110	70	51	50	53	Cloudy
,, 18	30·206	N.E.	...	114	64	49	49	55	Cloudy
,, 19	30·164	N.E.	...	116	68	45	47	53	Cloudy
,, 20	30·160	N.E.	...	117	70	49	52	57	Fine
,, 21	29·934	E.	...	109	73	49	56	60	Fine
,, 22	30·010	E.	...	112	71	50	54	60	Fine
,, 23	29·944	E.	...	80	61	51	53	58	Cloudy

The following magazines, journals, &c., have been received:—Cleveland Medical Journal, Saint Paul Medical Journal, Albany Medical Annals, Dominion Medical Monthly, American Medicine, Medical Review of Reviews, Indian Journal of Medical Research, Calcutta Medical Journal, Canadian Practitioner and Review, Interstate Medical Journal, American Journal of Roentgenology, American Journal of Surgery, Journal of Nervous and Mental Disease, American Journal of Obstetrics, British Dental Journal, British Journal of Dental Science, National Medical Journal, Journal d'Urologie, Brain, &c.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, June 28th.

ODONTOLOGY (Hon. Secretaries—F. Coleman, F. R. Smyth): at 8 P.M.

Paper:
Mr. Ernest Sturridge: The Discovery of Entamœba Buccalis in Pyorrhœa Pus and Treatment by Emetin Hydrochloride.

Discussion:
The Effects of Cleft Palate Operations on the Dental Arch (opened by Mr. H. Blakeway). Speakers:—Sir W. Arbuthnot Lane, Mr. Warwick James, and others.

Casual Communication:
Mr. George Thomson: A Method of Crowning Incisor Teeth.

SURGERY.—The Members of this Section are specially invited to attend the meeting of the Section of Odontology. (See above.)

Thursday, July 1st.

OBSTETRICS AND GYNÆCOLOGY (Hon. Secretaries—C. Hubert Roberts, Cuthbert Lockyer): at 8 P.M.

Specimens:
Mr. J. D. Malcolm: (1) Papilliferous Carcinoma of the Ovary associated with Adenomyoma of the Uterus; (2) Fibromyoma Free from Attachments in a Pelvic Abscess.

Short Communication:
Dr. E. A. Barton: The Condition of the Larynx and Trachea in the Stillborn Infant and its Bearing on Artificial Respiration.

Papers:
Mr. T. G. Stevens: Adenomyoma of the Recto-vaginal Septum.
Dr. W. S. A. Griffith: Determining Causes of the Fœtal Lie *in utero*.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

TUESDAY.—5 P.M., Croonian Lectures:—Surgeon-General Sir David Bruce, C.B.: Trypanosomes causing Disease in Man and Domestic Animals in Central Africa. (Lecture IV.)

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Dr. Pritchard: Bacterial Therapy Department. Mr. B. Harman and Mr. Gibb: Diseases of the Eye.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women. Mr. Gibb: Diseases of the Eye.

THURSDAY.—9 A.M., Dr. Bernstein: Bacterial Therapy Department. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. E. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham); Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. H. D. Gillies). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. Gillies). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients. 5.30 P.M., Eye Operations (Mr. R. P. Brooks). 4.30 P.M., Clinical Demonstration:—Dr. T. R. C. Whipham: Selected Cases of Children's Disease.

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M. Clinical Lecture.

For further particulars of the above Lectures, &c., see Advertisement Pages.

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It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

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Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. I. of 1915, which is completed with the issue of to-day, will be given in the next number of THE LANCET.

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VOLUMES for the first half of the year 1915 will be ready shortly. Bound in cloth, gilt lettered, price 16*s.*, carriage extra.

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